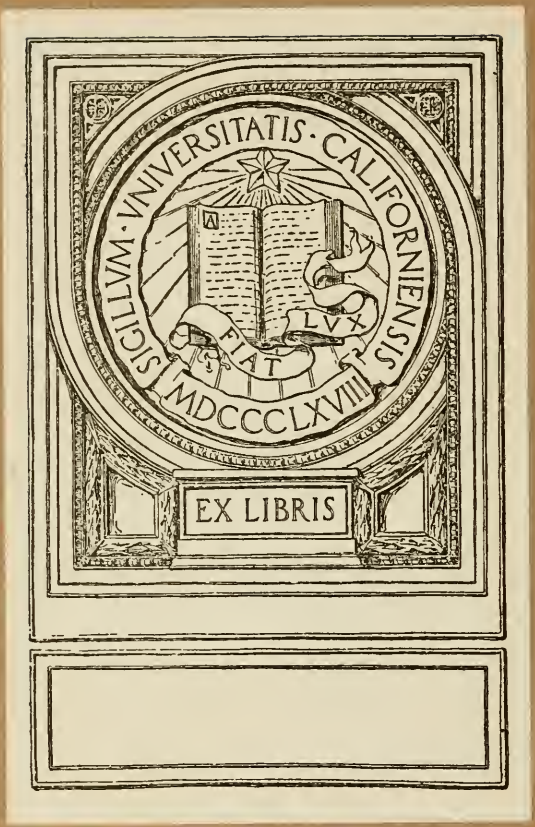
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# WHAT HAPPENED AT JUTLAND

COMMANDER C. C. GILL, U. S. NAVY

# WHAT HAPPENED AT JUTLAND

## THE TACTICS OF THE BATTLE

BY

C. C. GILL
COMMANDER, U. S. NAVY
AUTHOR OF "NAVAL POWER IN THE WAR," ETC.

WITH 26 DIAGRAMS

UNIV. OF CALIFORNIA

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## FOREWORD

THIS work of Commander Gill, U. S. Navy, is a thoughtful, painstaking and thorough research into all the evidence bearing upon the now historic battle of Jutland and constitutes a valuable contribution to the list of publications upon the Art of War on the Sea.

H. B. WILSON,
Admiral U. S. Navy,
Commander-in-Chief,
Atlantic Fleet.

*U.S.S. Pennsylvania,*
*Flagship.*

439419

## PREFACE

A GREAT deal has already been written about the battle of Jutland. The most recent contribution is a 600-page official record of the original English reports and despatches. The British have presented their side of the battle—the Germans have described the action as it appeared from the other point of view. Admiral Jellicoe, the British Commander-in-Chief, and Admiral Scheer, the German Commander-in-Chief, have both written books and explained their respective maneuvers fully and frankly. For these two books students of naval affairs should be deeply grateful. It should be recognized, however, that they are, necessarily, one-sided treatments. The subject, moreover, has become highly controversial, and, as a consequence, has been confused by somewhat misleading argumentative discussions.

Important questions of present and future naval policy depend, in large measure, upon conclusions drawn from the experiences of Jutland. The study of this engagement is an urgent matter and does not admit delay. No apology, therefore, is made for this attempt to gather together in one narrative authentic information available from both British

and German sources, and to give, as accurately as may be, an unbiased analysis of the battle.

Acknowledgment is made to officers of the War College and officers of the U. S. S. *Pennsylvania* for valued criticism and comment received during preparation of the manuscript. Acknowledgment is also made to Lieutenant G. J. Hazard, U.S.N.R.F., for his skill and courtesy in the work of making the diagrams.

C. C. Gill.

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# WHAT HAPPENED AT JUTLAND

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# WHAT HAPPENED AT JUTLAND

## I

## THE TACTICS OF THE BATTLE

"STRATEGY" prepares battles; "tactics" fights them. Strategy decides the force to be sent to any theater of operations, assigns the task or mission, arranges logistics—the supply of food, fuel and munitions, —coördinates effort by land and sea on all fronts, and in general deals with the larger considerations in the conduct of war. The decisions of strategy regarding the disposition and employment of fleets and armies are carried out by tactical maneuvers. It is thus seen that strategy and tactics are closely related. Tactics, in fact, is an instrument of strategy. There is no clear line of demarcation between the two, and confusion rather than clarity is likely to result if attempt is made to consider the one as quite distinct from the other.

Tactics may be defined broadly as embracing that part of strategy which has to do with maneuvers in the field. For instance, strategy decides to

move a fleet from one port to another, and the maneuvers used to carry out the decision are "tactical." Maneuvers in the face of the enemy, for approach, for battle, for chase, or for retirement, comprise battle tactics.

Although the highest form of tactics is an aggressive offensive to destroy the fighting power of the enemy, it sometimes happens that a temporary defensive attitude by certain forces is essential to the success of the general plan. A premature attack, even if a local tactical victory is achieved, may be detrimental rather than helpful in the accomplishment of the principal objective; or the cost of a victory may be greater than it is worth; or the situation may be such that it is not prudent to risk a battle. War is a serious business in which quixotic motives, however worthy they may be from a sentimental point of view, have no place.

Strategy is the master of tactics and determines their character, which, according to the war objective and the circumstances of the special situation, may be aggressive or evasive, offensive or defensive. Tactical decisions have to be made in the light of strategic considerations.

With this brief digression to explain the term "tactics" and the relation of "tactics" to "strategy," we shall now turn to a study of the battle of Jutland.

Throughout the war the main Naval Battle

Front was in the North Sea. Here the fleet of Great Britain, officially named the Grand Fleet, faced the German fleet, named the High Sea Fleet. In this area of about 120,000 square miles these two most powerful fleets in the world were continually engaged in a great strategic contest. The stake was absolute control of the seas and on this control hinged ultimately the issue of the World War.

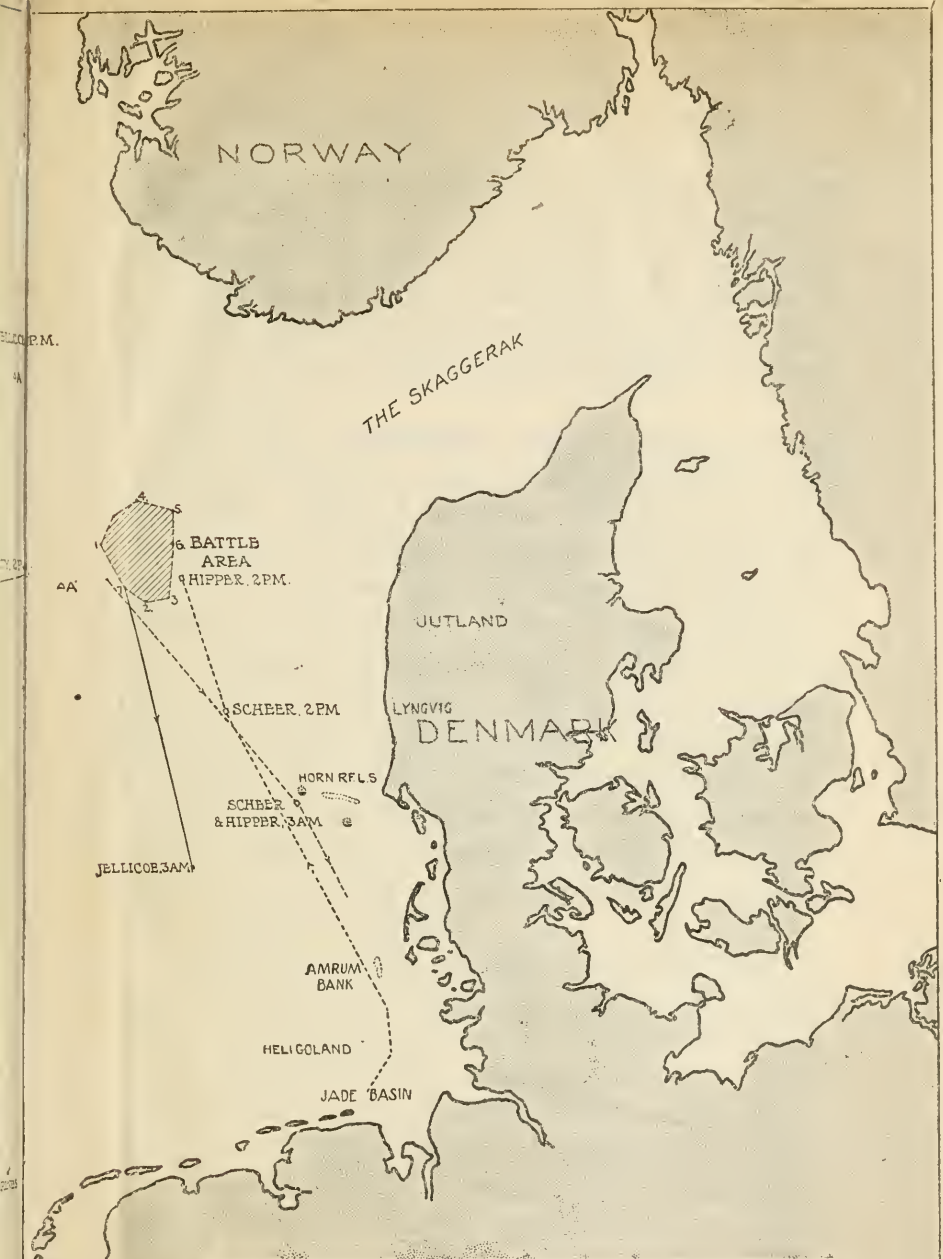
In main features the strategy employed by both England and Germany followed normal lines. England's naval policy was to establish control of all the great ocean areas by destroying enemy ships abroad, and to stop Germany's ocean trade and contain her home fleets by a so-called "distant blockade." The menace of off shore mine and torpedo operations covered by an inferior but powerful German battle fleet made a close blockade of German ports impracticable. The Grand Fleet, under Commander-in-Chief Admiral Sir John Jellicoe, was ready to fight in the open sea, but the margin of superiority was not deemed sufficient to warrant seeking an engagement with the High Sea Fleet under conditions of Germany's own choosing, in the vicinity of her mine fields and submarine bases. Except for occasional excursions to the South, England's battleships were held on watch in the less dangerous waters to the northward, in the vicinity of Scapa Flow, Orkney Islands. An outpost detachment of light cruisers, destroyers and submarines operated from Harwich, the nearest

suitable port on the English coast to the enemy fleet base behind Heligoland, while the Dover patrol guarded the Straits. These outpost vessels were supported by Vice Admiral Beatty's battle cruiser fleet based at Rosyth; and in April, 1916, an additional support of eight predreadnaughts and four cruisers was stationed in the Humber to safeguard the coast against sudden invasion. Fast German cruisers could make sudden raids upon the coast or even the channel, but they always ran the risk of being intercepted by a superior force and could hardly expect to do damage of military significance. (Diagram I.)

The war plan of Germany assigned her navy an offensive-defensive rôle. It was the objective of the High Sea Fleet to keep the Allied Naval forces at a distance from German shores; to safeguard the North and West frontiers joining the Army flanks in Russia and Belgium; to blockade Russia's Baltic ports; and at the same time maintain open German sea communications with the northern neutrals.

Germany did not wish to challenge the superior British fleet to decisive action on the high seas, but preferred to operate her battleships within restricted areas as a *fleet in being,* that is to say, holding the High Sea Fleet as a continual menace, within supporting distance of shielding mine fields and submarines among which it would not be prudent for the British fleet to advance to attack. In addition it was the plan of Germany to institute

16 BATTLESHIPS
3 BATTLE CRUISERS
LEFT SCAPA 9.30 P.M. 30 MAY.
MORAY FIRTH
U66, 6.48 A.M., SIGHTED
8 BATTLESHIPS WITH LT CRUISERS
AND DESTROYERS.
JELLICO
8 BATTLESHIPS
LEFT CROMARTY FIRTH
KINNAIRD HEAD
SCOTLAND
GERMAN
SUBMARINES
BEATTY, 2 P
FIRTH OF FORTH
U32, 5.30 A.M., SIGHTED
2 BATTLESHIPS, 2 CRUISERS
AND DESTROYERS.
6 BATTLE CRUISERS
4 FAST BATTLESHIPS
LEFT
ROSYTH 10.15 P.M.
30 MAY.
SUNDERLAND
DOGGER BANK
SCARBOROUGH
R. HUMBER
8 BATTLESHIPS (QE)
4 ARMORED CRUISERS
GERMAN SUBMARINES
LOWESTOFT
LIGHT CRUISERS
DESTROYERS & SUBMARINES
DOVER PATROL




## Diagram No. 1

CHART OF NORTH SEA, SHOWING STRATEGIC DISPOSITIONS

1. Beatty at 3:48 P.M.
2. " " 4:40 "
3. Scheer " 4:55 "
4. Jellicoe " 6:14 "
5. Beatty at 6:50 P.M.
6. Jellicoe " 7:41 "
7. " " 9:00 "

raids for moral effect and also to endeavor to bring about such a division of the British Fleet as might permit a locally superior German force to engage and destroy a British detachment. By tactics of attrition Germany hoped to reduce Britain's superiority until her fleet could be engaged on more equal terms.

Mines and submarines, always useful for the weaker naval power, were assiduously used by the Germans. When it was seen that the war was to be a long one, German strategists realized that the pressure of the sea blockade would fall heavily on German economic life. A counter naval offensive was necessary and the only weapon Germany could use was her submarines. The U-boat campaign against commerce was inaugurated and came perilously near to success. But it should be borne in mind that it was the protection of German dreadnaught guns that released these U-boats from coast defense duties and permitted them comparative freedom of operation.

It has been contended that Great Britain, by her North Sea blockade, enjoyed all the advantages which would have been gained by the destruction of the High Sea Fleet. This is not correct. Germany's fleet was an important factor throughout the war. It was the power of this fleet that made the Baltic practically a German Lake, maintained open the trade routes between Germany and the North European neutrals, closed Russia's chief

ports, and protected the German frontiers from the Gulf of Riga to Holland. It would be difficult to overestimate the influence, both direct and indirect, which the German High Sea Fleet exerted in bringing about the collapse of Russia. And, finally it was the cover of the High Sea Battle Fleet that permitted the U-boats freedom to come and go in the prosecution of their campaign against commerce. In estimating the tactical situation in the North Sea there should be no misunderstanding as to the essential task performed by the German battleship fleet, and the great influence a decisive British victory at Jutland would have had on the course of the war.

Turning now to the particular strategy which culminated in the battle of Jutland, it will be recalled that in May, 1916, the general military situation was not particularly pleasing for Germany. Russia was a powerful enemy. Her Baltic Fleet was then by no means negligible and had been cooperating in the Gulf of Riga with the right flank of the Russian Army. On the Western front the German offensive at Verdun had not succeeded. While the German General Staff did not, in all probability, feel any great anxiety as to the conditions on the land frontiers, still, the promise of victory made to the German people had not materialized. Although the submarine campaign against commerce was in operation, it was re-

stricted, and as yet no great amount of tonnage had been sunk. In 1916 Germany was not ready to risk an open rupture with America, and the vigorous protest of the United States against unlawful sinkings had resulted in a diplomatic humiliation damaging to German prestige. Under these circumstances it was logical strategy for Admiral Scheer, Commander-in-Chief of the High Sea Fleet, to seek a successful naval demonstration in order to strengthen national morale.

In studying the dispositions which led up to the battle of Jutland and the tactical decisions made by Scheer and Hipper during the engagement, it is important to understand the German point of view. The German people at this time were demanding greater activity on the part of their fleet in justification of the vast sums spent for its creation and maintenance, and to make more distinctly manifest its war-time usefulness. In view of the general situation, and further in view of this popular demand for greater fleet activity, in the spring of 1916, the German strategists had decided to launch a more aggressive naval campaign the object of which was to strike at England by sea in such a way as to deprive her of inclination to continue the war.

Commander-in-Chief Scheer reasoned that this could be achieved by a successful blow at English sea power centered in the navy, or by a blow at British financial life centered in commercial ship-

ping, or—better yet—by a combination of both these courses.*

Admiral Scheer, in estimating the situation, argued that if the High Sea Fleet was withheld on the defensive while the U-boats instituted a vigorous campaign against merchant ships, then, if the submarines were successful, Admiral Jellicoe might lead out the Grand Fleet on an aggressive offensive which might compel Germany to fight a fleet to fleet action at Admiral Jellicoe's selected time; that there was disadvantage in thus giving the initiative to the British, as Admiral Jellicoe might choose a time when part of the German forces were under repairs, or otherwise unfit for service, or absent in the Baltic for exercises; and, therefore, that the wiser plan was for Germany to assume the initiative, and conduct definite, systematic operations to induce the British to send out forces and afford the High Sea Fleet opportunity to attack them under conditions favorable to Admiral Scheer, at his—not Admiral Jellicoe's—selected time.†

The minor raids already conducted against England had made an impression. The successful bombardment of Lowestoft on April 25th, and the escape of the raiders, had caused public dissatisfaction, and Mr. Balfour, the First Lord of the Admiralty, had announced that should the German ships again venture to show themselves off the Brit-

* Reference, Admiral Scheer's book "The German High Seas Fleet in the World War."

† Reference, Admiral Scheer's book.

ish coast, measures had been taken to insure their being severely punished. (After this raid the 3rd Battle Squadron of predreadnaughts and the 3rd Cruiser Squadron were withdrawn from Scapa and stationed in the Humber to guard the English coast.)

Reasoning from these premises, Admiral Scheer planned operations to bring about a naval battle on terms advantageous to Germany during the period May 23rd to June 1st, 1916. It should be added that Admiral Scheer was not seeking a decisive fleet battle unless he could succeed in drawing the British fleet into a trap. What he sought was an opportunity to engage and destroy with superior force an inferior detachment of the British fleet before the main body could arrive in support. To do this Admiral Scheer was ready to risk a "tip and run" encounter with the British Main Fleet, and for this contingency he had a carefully rehearsed maneuver of retirement by which he intended to withdraw the High Sea Fleet should it become involved against a superior British concentration.

In brief, the German enterprise involved a cruiser bombardment of Sunderland to draw out British naval forces, and an endeavor to lead these British forces toward the supporting German Battle Fleet so that Admiral Scheer might attack them under favorable conditions. During this week, May 23rd to June 1st, about 24 U-boats were sta-

tioned off the British ports of sortie and along the probable enemy routes of advance, to observe and attack. Also, a large number of Zeppelins were assigned to assist the enterprise by reconnaissance from the air. (Diagram 1.)

The fact that the U-boats could not remain out longer than June 1st imposed this limit to the operation. The attack on Sunderland required clear weather. Of this Admiral Scheer states: "An extensive aerial reconnaissance was an imperative necessity for an advance on Sunderland in the northwest, as it would lead into waters where we could not allow ourselves to be forced into giving battle."

If the weather continued unfavorable for scouting from the air, a substitute plan was provided by which, in place of the Sunderland bombardment, an advance against cruisers and shipping, in and near the Skaggerak, was to be employed in order to draw out the British forces. Operating in this direction made it possible to do without the air reconnaissance as the Jutland coast offered a certain amount of cover against surprise, and also the distance to the British points of support was considerably greater.

The order issued by Admiral Scheer on May 18th was as follows:

"The bombardment of Sunderland by our cruisers is intended to compel the enemy to send

out forces against us. For the attack on the advancing enemy the High Sea Fleet forces to be south of the Dogger Bank, and the U-boats to be stationed for attack off the east coast of England. The enemy's ports of sortie will be closed by mines.* The Naval Corps will support the undertaking with their U-boats. If time and circumstances permit, trade-war will be carried on during proceedings. . . ."

Each day proved unfavorable for airship observation and on the 31st Admiral Scheer decided to use the modified plan by which the advance against shipping in the Skaggerak was substituted for the bombardment of Sunderland. That reconnaissance from the air could not be depended upon during the entire period from May 23rd to June 1st directs attention to one of the limitations of aircraft as scouts.

* One of these mines later caused the loss of the Cruiser *Hampshire* with Earl Kitchener and his staff.

## II

## FLEET MOVEMENTS BEFORE THE BATTLE

At early dawn of May 31st, Vice Admiral Hipper, commanding the German advance reconnaissance force of 5 battle cruisers attended by 5 light cruisers and 33 destroyers, left the Jade Basin and stood out to sea followed one half hour later by the supporting High Sea Battle Fleet. (Diagrams 2, 3.) The "Third Squadron," 7 of Germany's most modern dreadnaughts, was in the van with the Flagship *Koenig* leading; then came Squadron One, 9 dreadnaughts of the *Heligoland* and *Nassau* type, led by the Fleet Flagship, *Friedrich der Grosse,* flying the flag of the Commander-in-Chief, Admiral Scheer; and bringing up the rear was the "Second Squadron," 6 predreadnaughts of the *Deutschland* class. The entire fleet numbered 22 battleships, 5 battle cruisers, 11 light cruisers and about 78 destroyers. This second most powerful fleet in the world was a comparatively new creation. Germany had almost no naval traditions. At this time, however, Admiral Scheer's force was in a high state of efficiency with

## BEATTY.

- TIGER — 28,500, 8-13.5", 29K., 9"A.
- LION, QUEEN MARY, PRINCESS ROYAL — 26,350 TONS, 28K. 8-13.5"GUNS. ARMOR 9".
- NEW ZEALAND, INDEFATIGABLE — 18,800 TONS, 26K. 8-12"GUNS. ARMOR 6".

## HOOD.

- INVINCIBLE, INDOMITABLE, INFLEXIBLE — 17,250 TONS, 25 K. 8-12"GUNS, ARMOR 6".

## EVAN THOMAS

- BARHAM, VALIANT, WARSPITE, MALAYA — 27,500 TONS, 25K. 8-15"GUNS, ARMOR 13".

## HIPPER

- DERFFLINGER, LUTZOW — 26,180 TONS 8-12"GUNS, 28K, ARMOR 12".
- SEYDLITZ — 24,610, 10-11" 26.75K., 11.75"A.
- MOLTKE — 22,640, 10-11" 27.25K., 11"A
- VON DER TANN — 19,100, . 8-11" 26K., 9.75"A.

DIAGRAM NO. 2

BATTLE CRUISERS AND FAST BATTLESHIPS (SHOWING TONNAGE, SPEED, ARMOR AND ARMAMENT)

III.

- KÖNIG
- GROSSER KURFÜRST
- MARKGRAF
- KRONPRINZ

25,390 TONS.
10-12"GUNS, SPEED 23.
ARMOR 14".

- KAISER
- PRINZ REGENT LUITPOLD
- KAISERIN

24,410 TONS.
10-12"GUNS, SPEED 21.
ARMOR 13.75"

I.

- FRIEDRICH DER GROSSE — 24,410, 10-12", 21K., 13.75"A.

- OSTFRIESLAND
- THÜRINGEN
- HELGOLAND
- OLDENBURG

22,400 TONS.
12-12"GUNS, SPEED 20.5.
ARMOR 11.75"

- POSEN
- RHEINLAND
- NASSAU
- WESTFALEN

18,600 TONS.
12-11"GUNS, SPEED 20.
ARMOR 11.75".

II.

- DEUTSCHLAND
- POMMERM
- SCHLESIEN
- SCHLESWIG-HOLSTEIN
- HANNOVER
- HESSEN

13,200 TONS.
4-11"GUNS, SPEED 18.
ARMOR 9.75".

## Diagram No. 3

GERMAN HIGH SEA FLEET IN CRUISING FORMATION (SHOWING TONNAGE, SPEED, ARMOR AND ARMAMENT)

Distance between ships 760 yards. Distance between squadrons 3,800 yards. For battle formation distances were closed to: 550 yards between ships and 1,100 yards between squadrons

a personnel as yet untainted by the sinister influences which later broke down its morale and finally culminated in mutiny.

Mine sweepers had cleared a way through the British fields and screening destroyers zig-zagged in and out to keep down any submarines that might be lying in wait. When west of Amrum Bank, the course was laid north, and Admiral Hipper with his advance force proceeded to carry out his orders, which were to pass out of sight of Horn Reefs and the Danish coast, show himself off the Skaggerak before dark, cruise in the Skaggerak during the night, and at noon of the next day join up with the Main Fleet. Groups of English cruisers had been reported off the Norwegian coast. It was expected that the presence of Hipper off the Skaggerak would be reported, that British forces would start from England soon after the receipt of this information, and that, in all probability, a battle would result on the following day, June 1st.

On this day the British Grand Fleet was also at sea. It was part of British naval strategy to make periodic sweeps through the waters of the North Sea, and one of these sweeps was now in progress.*

It appears that on the 30th the German Flag-

* Admiral Jellicoe has stated:—"In accordance with instructions contained in their Lordship's telegram, No. 434, of 30 May, the Grand Fleet proceeded to sea for the purpose of carrying out one of its periodical sweeps in the North Sea."

ship had been sending an unusually large number of messages. Although these code messages could not be deciphered, the sending ship was identified, and by directional radio instruments the British had determined a movement of the German Flagship of about 7 miles, indicating that she had shifted from the inner harbor of Wilhelmshaven to an outer anchorage in the Jade Basin. The British knew that the German fleet was ready for sea, and naval activity of some sort was inferred.

Because of this inference and the consequent timely sailing of the British Grand Fleet, however, it does not follow that Admiral Jellicoe had foreknowledge that a fleet to fleet action was pending. It is also to be remembered that a considerable force of British light cruisers and destroyers were held in port at Harwich. It is reasonable to suppose that had the British Admiralty been informed of the German plan this Harwich force would have been sent out to take part in the battle.

On the evening of May 30th, the British battle fleet of 24 dreadnaughts, attended by 3 battle cruisers, 12 light cruisers, 8 armored cruisers, and 46 destroyers had sailed from the northern bases, and a few hours later Admiral Beatty's advance force of 4 fast dreadnaughts, 6 battle cruisers, 15 light cruisers, and 31 destroyers had set out from Rosyth. (Diagrams 2 and 4.) The entire British fleet formed a veritable armada totaling 28 dreadnaughts, 9 battle cruisers, 27 light cruisers, 8 ar-

| VII. | V. | IV. | III. | II. | I. |
|---|---|---|---|---|---|
| AGINCOURT<br>27,500 T. 22 K.<br>14-12" G. 9" A. | ST. VINCENT<br>19,250 T. 21 K.<br>10-12" G. 10" A. | VANGUARD<br>19,250 T. 21 K.<br>10-12" G. 10" A. | CANADA<br>28,000 T. 22.75 K.<br>10-14" G. 9" A. | THUNDERER<br>22,500 T. 21 K.<br>10-13.5" G. 12" A. | ERIN<br>23,000 T. 21 K.<br>10-13.5" G. 12" A. |
| HERCULES<br>20,000 T. 21 K.<br>10-12" G. 11" A. | NEPTUNE<br>20,000 T. 21 K<br>10-12" G. 10" A. | TEMERAIRE<br>18,600 T. 21 K.<br>10-12" G. 10" A. | SUPERB<br>18,600 T. 21 K.<br>10-12" G. 10" A | CONQUEROR<br>22,500 T. 21 K.<br>10-13.5" G. 12" A. | CENTURION<br>23,000 T. 21 K.<br>10-13.6" G. 12" A. |
| REVENGE<br>25,750 T. 21.5 K.<br>8-15" G. 13" A. | COLLINGWOOD<br>19,250 T. 21 K.<br>10-12" G. 10" A. | BELLEROPHON<br>18,600 T. 21 K.<br>10-12" G. 10" A. | ROYAL OAK<br>25,750 T. 21.5 K.<br>8-15" G. 13" A. | MONARCH<br>22,500 T. 21 K.<br>10-13.5" G. 12" A. | AJAX<br>23,000 T. 21 K.<br>10-13.5 G. 12" A. |
| MARLBOROUGH<br>25,000 T. 21 K.<br>10-13.5" G. 12" A. | COLUSSUS<br>20,000 T. 21 K.<br>10-12" G. 11" A. | BENBOW<br>25,000 T. 21 K.<br>10-13.5" G. 12" A. | IRON DUKE<br>25,000 T. 21 K.<br>10-13.5" G. 12" A. | ORION<br>22,500 T. 21 K.<br>10-13.5" G. 12" A. | KING GEORGE V.<br>23,000 T. 21 K.<br>10-13.5" G. 12" A. |

## Diagram No. 4

BRITISH BATTLE FLEET OF 24 DREADNAUGHTS (SHOWING TONNAGE, SPEED, ARMOR AND ARMAMENT)

mored cruisers, and 77 destroyers. It represented the acme of naval development. Never before in history had such a powerful array of fighting ships been grouped under one command. These ships were manned, moreover, by a personnel steeped in the traditions of England's long mastery of the seas, traditions epitomized in the names of Blake, Hawke, and Nelson.

At this period of the war, no continuous British submarine observation was maintained off the German bases, and Admiral Jellicoe received no reports of the departure of the High Sea Fleet. The advantage of the initiative enabled Germany to send out observing U-boats which were stationed approximately as indicated on the chart (Diagram 1):—Some off Scapa Flow; one off Moray Firth; a large number off the Firth of Forth; several off the Humber; and the remainder north of Terschelling Bank watching the approaches to the Straits and Harwich.

At 5:30 A.M., on the 30th, U-32, about 70 miles east of the Firth of Forth, reported two British battleships, two cruisers, and several destroyers making a southeast course. These were probably part of Sir David Beatty's force which had sailed from Rosyth. An hour later this same submarine reported that she had intercepted English radio messages to the effect that two battleships and groups of destroyers had sailed from Scapa. Shortly after this, U-66 reported from about 60

miles east of Kinnaird Head, a squadron of eight British battleships, attended by light cruisers and destroyers, on a northeast course. These evidently belonged to Sir Martin Jerram's Squadron which was en route from Cromarty to rendezvous at sea with the rest of the battle fleet which had sailed from Scapa.

From the above reports Admiral Scheer estimated that the diverging courses of the detachments sighted did not indicate a large operation such as an advance on the German bight; nor, to his mind, did they appear to have any connection with the German enterprise. To Admiral Scheer this information from his submarine scouts presaged, not a British fleet concentration, but rather a likelihood that his hope of meeting with separate British detachments might be fulfilled. He was, therefore, the more encouraged to carry out his plan.

At 2:00 P.M., on May 31st, the opposing forces were in the relative positions shown in Diagram 5.

The main body of the British Grand Fleet, commanded by Admiral Jellicoe, was about 70 miles off the Norway coast in Lat. 57° 57′ N., Long. 3° 45′ E. From Jellicoe Beatty bore S. 23° E. and was distant 77 miles, while Scheer bore about S. 40° E. and was distant about 150 miles. The Grand Fleet was disposed as indicated in Diagram 6. The 24 dreadnaught battleships were steaming in six columns of four ships each with a close anti-submarine screen of 4 light cruisers and about 34 destroy-

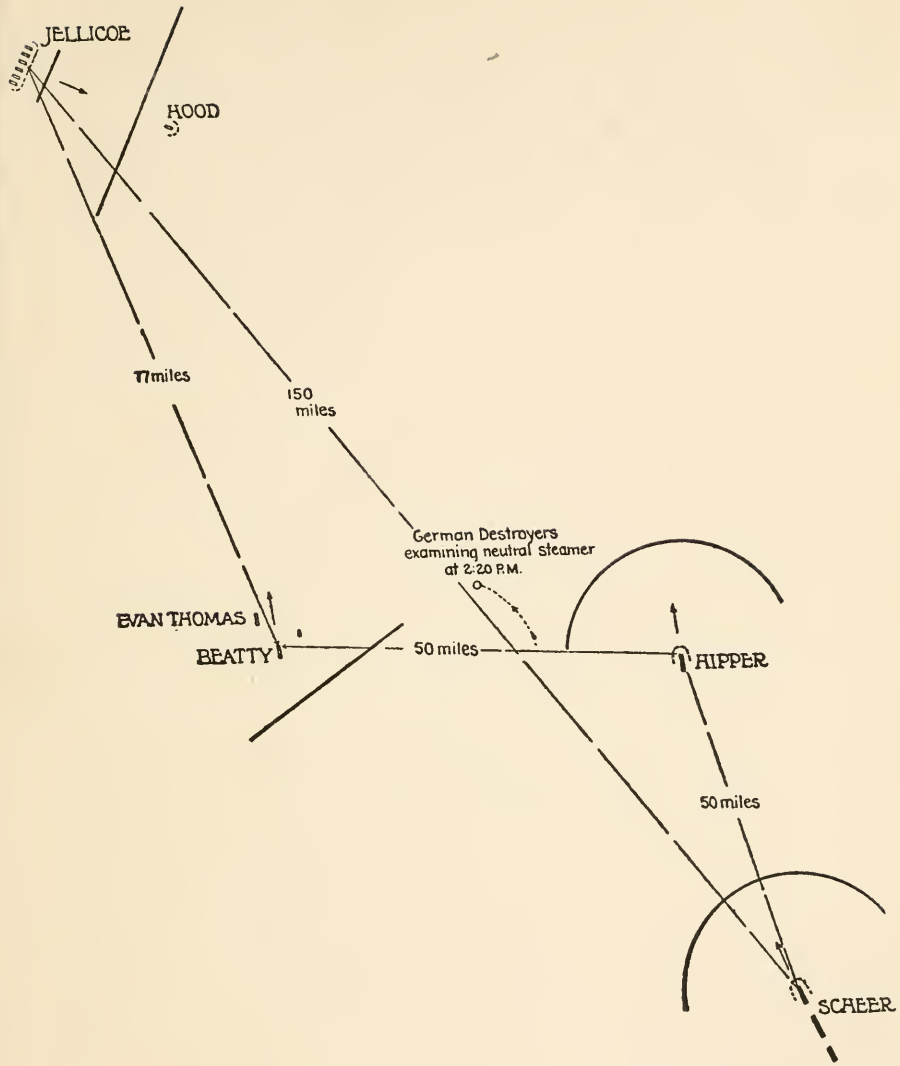



DIAGRAM NO. 5

RELATIVE POSITIONS OF ALL FORCES AT 2:00 P.M.

ers; 5 light cruisers covered the front of the capital ships 3 miles in advance of the main body, 6 armored cruisers were spread 6 miles apart on a line 16 miles ahead of the Battle Fleet and a linking armored cruiser to relay signals was placed 6 miles toward the Commander-in-Chief's Flagship, the *Iron Duke.* Each armored cruiser was attended by one destroyer. The Third Battle Cruiser Squadron, Hood's three Invincibles, with two light cruisers and four destroyers, was stationed 20 miles ahead of the Battle Fleet. All this force had a fleet speed of 20 knots and was now zig-zagging, speed of advance 14 knots in the direction S. 50° E.

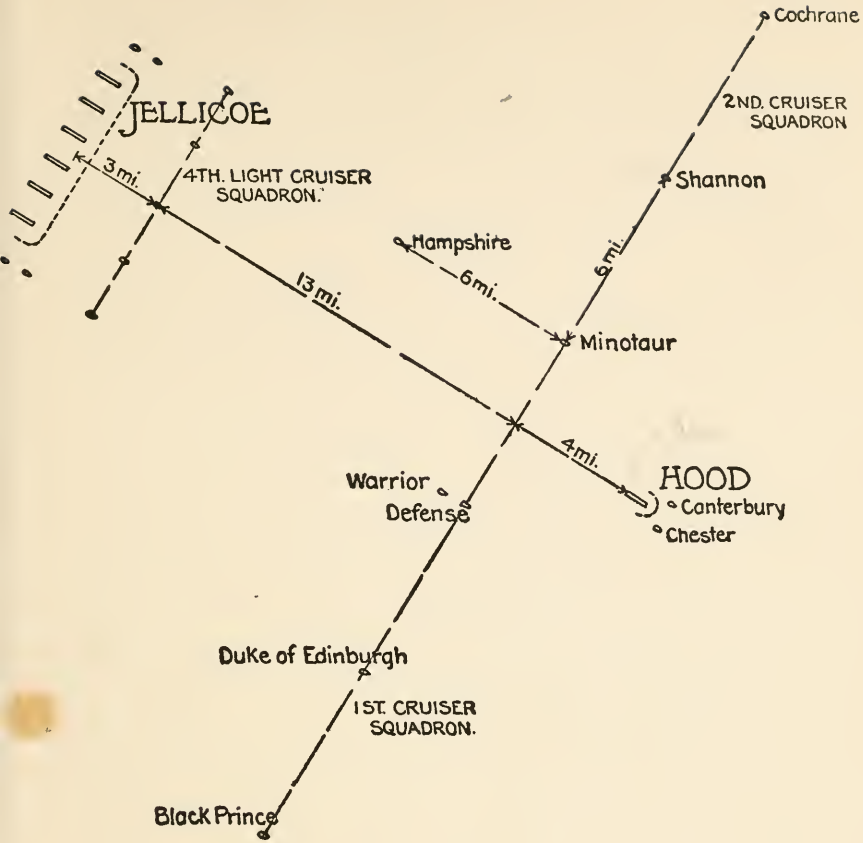
The advance force under Vice Admiral Beatty, consisting of six battle cruisers and four 25-knot battleships with attending light cruisers and destroyers, was disposed as shown in Diagram 7. The 1st Squadron of four battle cruisers was in single line ahead, led by Admiral Beatty's Flagship, the *Lion,* and screened by the light cruiser *Champion* and ten destroyers of the 13th Flotilla. The 2d Squadron of two battle cruisers was 3 miles E.N.E. of the *Lion* and screened by six destroyers. The 5th Battleship Squadron, four dreadnaughts of the *Queen Elizabeth* class, was 5 miles N.N.W. of the *Lion* and screened by one light cruiser and nine destroyers of the 1st Flotilla.* A scouting and screening line of eleven light cruisers was eight

* The name ship *Queen Elizabeth* was undergoing repairs after severe service in the Dardanelles Campaign.

miles S.S.E. of the *Lion,* spread in a direction E.N.E. and W.S.W., distance between ships five miles. The *Engadine,* a sea-plane carrier, was also with these light cruisers. The link ship *Yarmouth* was midway between the line of light cruisers and the *Lion.* All this advance force had a fleet speed of twenty-five knots and was now advancing on a course north by east toward the rendezvous with the Battle Fleet, at a speed of nineteen and one half knots.

By the plan of the sweep Jellicoe was to be at position "A," Lat. 57° 45′ N., Long. 4° 15′ E. at 2:00 P.M. (Diagram 1.) The Battle Fleet had been delayed, however, to wait for a destroyer to examine some trawlers and was eighteen miles behind schedule. Beatty's 2:00 P.M. position, according to the plan, was Lat. 56° 40′ N., Long. 5° 00′ E. (Point "A'" in Diagram 1.) He actually was about twelve miles N. 64° W. from this point, Lat. 56° 46′ N., Long. 4° 40′ E., thus bringing the relative positions of Beatty and Jellicoe within six or seven miles of the plan, but geographically some twelve or fifteen miles to the westward. Admiral Beatty had been informed that Admiral Jellicoe would sweep to the south from point "A."

Considerable criticism has been made of this disposition of the British forces, to the effect that Beatty was too far away from Jellicoe. They were then operating seventy-seven miles apart. This is a matter of opinion, and depends upon the plan of




## Diagram No. 6

CRUISING FORMATION OF FORCES UNDER IMMEDIATE COMMAND OF ADMIRAL JELLICOE AND REAR ADMIRAL HOOD

coördination. It will be noted later on that a discrepancy of twelve miles developed in the navigational reckoning of Jellicoe and Beatty. This caused confusion at the critical juncture when Jellicoe joined Beatty in action against the enemy. While it is not considered tactically unsound to operate a fast detachment this distance in advance of the supporting battle fleet, it is of utmost importance that proper touch be maintained by linking up ships or other means, and suitable precautions taken to assure that the detachment be not trapped and cut off by a superior enemy force.

The main body of the High Sea Fleet, commanded by Admiral Scheer, was now fifty miles west of Lyngvig on the Jutland coast. The twenty-two battleships were steaming in column with the seven most modern dreadnaughts in the van squadron, the eight older type dreadnaughts led by the Fleet Flagship, *Friedrich der Grosse,* in the center, and the predreadnaught squadron of six ships bringing up the rear. The distance between ships was 763 yards and the interval between squadrons was 3,800 yards. (Diagram 3.) Six light cruisers with destroyers were spread ahead as a protective scout line, and the balance of the forty-four destroyers attending the battleships operated as a close-up anti-submarine screen. All this force had a maximum fleet speed of seventeen knots and was now on course north, speed fourteen knots. Comparing the cruising formations of the two fleets, it is

seen from Diagram 6 that Jellicoe was in line of divisions with his strength fairly well distributed, favoring his left and center; the right center carried the weaker ships, while the right flank division was strengthened by the *Marlborough* and the *Revenge:* on the other hand, Diagram 3 shows that Scheer was in extended column, his most powerful ships in the van, the intermediate strength in the center, and the weak predreadnaughts in the rear. Diagrams 2, 3 and 4 show the order of ships, their heavy gun strength, their main armor protection, and their speed.

The advance German force, technically named the "Reconnaissance Force," under Vice Admiral Hipper, comprising 5 battle cruisers, 5 light cruisers and 33 destroyers, was about 50 miles ahead of Scheer and about 50 miles east of Beatty. (See Diagram 8.) The 5 battle cruisers were in column, attended by a close-up anti-submarine destroyer screen, while the light cruisers and other destroyers were spread out in a semicircle about ten miles ahead and on either flank. All this advance force had a fleet speed of about 26½ knots and was proceeding on a northerly course at a speed of about 24 knots. Comparing the opposing battle cruisers, it is to be noted that the British were superior in gun power and the Germans in armor protection. German naval construction had, at a sacrifice in gun power, devoted a larger percentage of ship tonnage to armor protection.

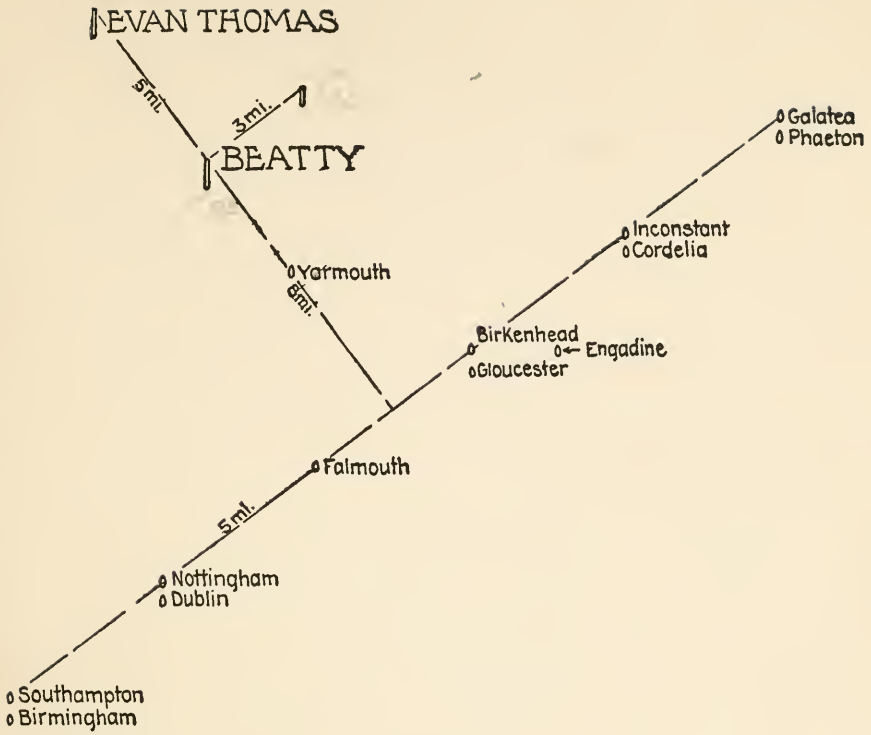



DIAGRAM NO. 7

CRUISING FORMATION OF FORCES UNDER IMMEDIATE COMMAND OF VICE ADMIRAL BEATTY AND REAR ADMIRAL EVAN-THOMAS

TABLE COMPARING STRENGTH OF OPPOSING FORCES

| *Type.* | *British.* (Beatty) | *German.* (Hipper) |
|---|---|---|
| Dreadnaught Battleships ..... | 4 | 0 |
| Battle Cruisers ..... | 6 | 5 |
| Light Cruisers ..... | 15* | 5 |
| Destroyers ..... | 31 | 33 |

* Including one Sea-plane Carrier.

| *Type.* | *British.* (Jellicoe) | *German.* (Scheer) |
|---|---|---|
| Dreadnaught Battleships ..... | 24 | 16 |
| Predreadnaught Battleships .... | 0 | 6 |
| Battle Cruisers ..... | 3 | 0 |
| Armored Cruisers ..... | 8 | 0 |
| Light Cruisers ..... | 12 | 6 |
| Destroyers ..... | 46 | 45 |

There is still some question as to the exact number of destroyers present. Lieutenant Commander Frost in the *Naval Institute Proceedings* gives the following comparative table:—

| *Type* | *British No.* | *Tonnage* | *German No.* | *Tonnage* | *Superiority British* |
|---|---|---|---|---|---|
| Dreadnaught Battleships | 28 | 647,550 | 16 | 363,360 | 1.78 to 1 |
| Battle Cruisers | 9 | 196,900 | 5 | 118,710 | 1.66 to 1 |
| Light Cruisers | 26 | 108,290 | 11 | 44,726 | 2.42 to 1 |
| Destroyers | 78 | 77,200* | 77 or less | 60,300* | 1.28 to 1 |

* Approximate

Comparing the totals of the two fleets on a tonnage basis, the British had an aggregate superiority of about 7 to 4 or 1.75 to 1. (The armored cruisers of the British and the predreadnaughts of the Germans are not included in this comparison.) Including the German predreadnaughts the aggregate tonnage of German capital ships was 561,110 as against the British 844,450.

The British had a total of 344 heavy guns: 48 15-inch, 10 14-inch, 142 13.5-inch, and 144 12-inch. The Germans had a total of 244 heavy guns: 144 12-inch, and 100 11-inch.

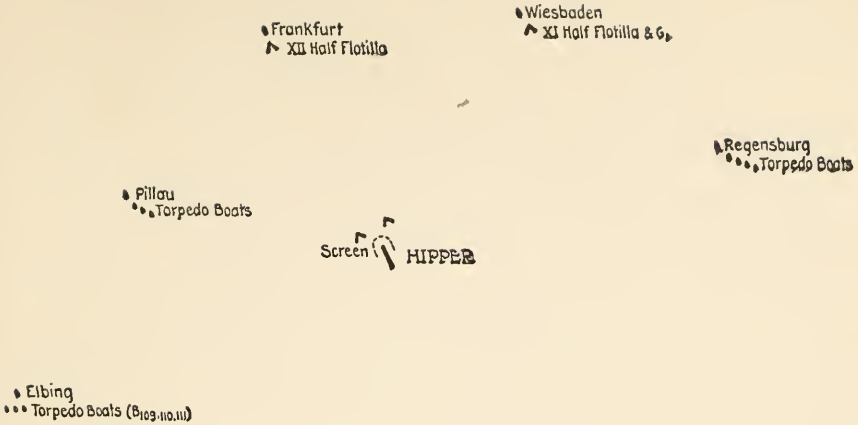
A 15-inch shell weighs 1,950 lbs., a 14-inch shell weighs 1,600 lbs., a 13.5-inch 1,400 lbs., a 12-inch 850 lbs.,* and an 11-inch 760 lbs. A single discharge of all British heavy guns in the battle of Jutland weighed 713,600 lbs. as compared with 217,264 lbs. for the German side.†

In armor protection the German ships were better provided than the British. Tonnage is the fairest basis of comparison, as it represents capital that can be invested at discretion for offense and defense.

In the battle itself, submarines and aircraft took no actual part. The British had a sea-plane carrier which flew some planes during the approach but they accomplished nothing of note. No British submarines were in the battle. The Germans had twenty-four submarines and ten airships which took part in the operations, but none of these were present on the field of action during the afternoon and

* A 12-inch British weighs 850 lbs. The German 12-inch is heavier and Comdr. Bellairs gives its weight as 981 lbs.

† All the British 15-inch, 14-inch and 13.5 inch, except the *Erin's* 13.5-inch, were in center line turrets bearing on both broadsides. All the 12-inch and 11-inch, however, were not capable of being fired on both sides. The Germans suffered particularly in this respect. The four *Heligolands* lost four 12-inch guns each, and the four *Nassaus* lost four 11-inch each. Sir Eustace D'Eyncourt gives the superiority of the Grand Fleet to the High Sea Fleet at Jutland as 175 per cent in weight of broadsides, or nearly 3 to 1. ("Naval Construction During the War" by Sir Eustace D'Eyncourt.)




## Diagram No. 8

CRUISING FORMATION OF RECONNAISSANCE FORCE COMMANDED BY VICE ADMIRAL HIPPER

evening of May 31st. Although between the hours of two and three P.M. five Zeppelins ascended for long distance reconnaissance in the sector north to west of Heligoland, they did not see their own fleet, nor the British fleet, nor did they hear anything of the battle.*

* In speaking of U-boat enterprises and their tactical employment, Admiral Scheer states:—

"Coöperation with separate units or with the entire Fleet could not be sufficiently well organized to prove dependable for certain operations. Tactical coöperation would have been understood to mean that on the Fleet putting out to sea with the possibility of encountering the enemy, numbers of U-boats would be present from the beginning in order to be able to join in the battle. Even as certain rules have been evolved for the employment of cruisers and torpedo boats in daylight battle to support the activity of the battleship fleet, so might an opportunity have been found for the tactical employment of the U-boats. But no preliminary work had been done in that respect and it would have been a very risky experiment to take U-boats into battle without a thorough trial. The two principal drawbacks are their inadequate speed and the possibility of their not distinguishing between friend and foe.

"Only temporary coöperation was possible in the case of enterprises by the Fleet and attacks by the U-boats when each unit had a special duty, to be mutually supplemented but without exacting any tactical union. If, for instance, there was the intention to bombard a certain coastal town, it might be assumed that English fighting forces would at once rush out from different harbors where they were lying to drive off or capture the disturbers of their peace. If U-boats had been stationed off such towns, where it was presumed there were enemy ships, they would probably have a chance of attacking.

"Consideration was given as to what would be the most desirable way to station U-boats off enemy harbors; how they could be used in the form of movable mine-barriers, as flank protection, or otherwise render assistance. . . ."

## III

## THE PHASES OF THE BATTLE

The battle of Jutland is conveniently divided into the following five phases (each of these will be considered separately and in turn):

*First Phase:* (2:00 P.M. to 4:55 P.M.)

*British Advance Force under Beatty encounters German Advance Force under Hipper. Hipper leads the action to the southeast and effects juncture with the High Sea Battle Fleet under Scheer.* (*Diagrams 9 and 10.*)

*Second Phase:* (4:55 P.M. to 6:40 P.M.)

*British Advance Force engaged with van of German High Sea Fleet; Beatty leads action to north and effects juncture with Jellicoe and Hood. Jellicoe deploys the battle fleet and Scheer withdraws to the southwest.* (*Diagram 15.*)

*Third Phase:* (6:40 P.M. to 7:17 P.M.)

*Scheer turns back and attacks the British center with guns and torpedoes. After a brief engage-*

*ment Scheer again withdraws to the west under cover of a smoke screen.* (*Diagram 20.*)

*Fourth Phase:* (7:17 P.M. to 9:00 P.M. Dark.)

*In the gathering twilight Scheer, avoiding action, hauls around from west to southeast, and seeks to draw closer to Horn Reefs. Jellicoe tries to regain touch on westerly courses, then turns to the southwest, and finally to south.* (*Diagram 22.*)

*Fifth Phase:* (9:00 P.M. to 3:00 A.M.)

*During the night Jellicoe withdraws to the south while Scheer steers for Horn Reefs. British light forces are intermittently engaged with the High Sea Fleet.* (*Diagram 24.*)

The day of the battle was partly cloudy to overcast, but the sun broke through in places most of the time. Except for a moderate swell the sea was smooth. There was very little wind. Visibility was reported as good in the first stages of the action, but later in the afternoon was considerably reduced by mist and smoke which hung low in the heavy atmosphere.

NOTE: The tracks of the heavy ships throughout the battle are shown in Diagrams Nos. 9, 10, 15, 20, 22, and 24 of the five phases. Important situations during these phases are portrayed in more detail by position diagrams which also show light forces. These diagrams have been constructed by combining data gleaned from the writings of Admiral Jellicoe, Admiral Scheer, Commander von Hase, Gunnery Officer of the *Derfflinger,* and other authoritative sources, both British and German. No attempt has been made to plot in all the light forces. The positions of these are given approximately to indicate how the destroyers and light cruisers entered as factors, influencing the major tactics of the battle.

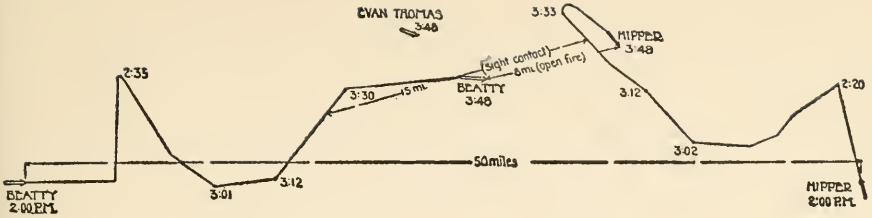
# IV

## THE BATTLE: FIRST PHASE

### (2:00 P. M. to 4:55 P. M.)

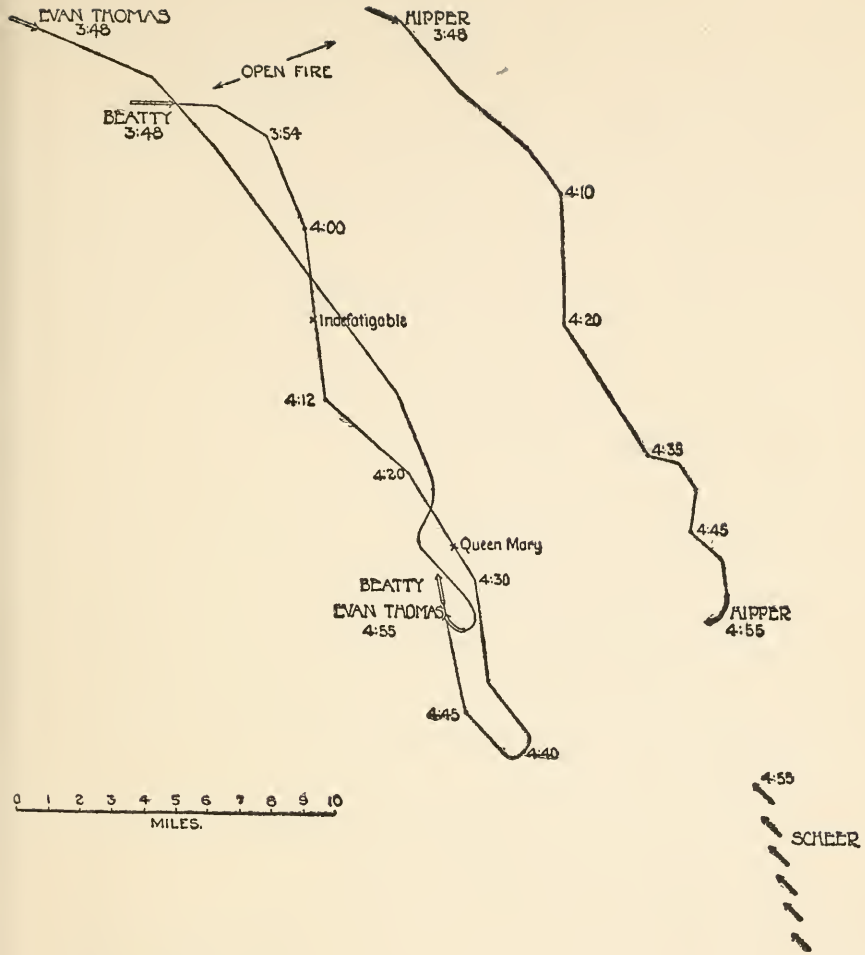
*British Advance Force under Beatty encounters German Advance Force under Hipper. Hipper leads the action to the southeast and effects juncture with the High Sea Battle Fleet under Scheer.* (Diagrams 9, 10.)

In the early afternoon of the day of the battle the western destroyers of Hipper's advanced scouting line were diverted to the left to examine a steamer. This proved a small incident carrying in its train large events. While so engaged these German destroyers made smoke contact with Beatty's eastern scout. A few minutes before this contact, the British Advance Force had turned to the north and as Beatty and Hipper were then on about parallel courses they would have just cleared each other had it not been for the timely appearance of this neutral steamer. Both sides proceeded at once to develop this contact, and by 2:30 Beatty and Hipper knew by radio of the presence of enemy light forces. Jellicoe also received the report and directed Hood to proceed with the three battle cruisers under his command to head off the enemy




## Diagram No. 9

TRACK OF THE BATTLE CRUISERS DURING THEIR BATTLE APPROACH (2:00 TO 3:48 P.M., 31 MAY)




## Diagram No. 10

TRACK OF THE HEAVY SHIPS DURING THE FIRST PHASE (2:00 P.M. to 4:55 P.M.)

British Advance Force under Beatty encounters German Advance Force under Hipper. Hipper leads the action to the southeast and effects juncture with the High Sea Battle Fleet under Scheer

should he attempt to escape via the Skaggerak. Hipper headed to the west and northwest to investigate. Beatty turned to the southeast to cut off the enemy in case he attempted to retire toward the Horn Reefs passage. Shortly after 2:30, Beatty was informed of the presence of Hipper's heavy ships. As the opposing battle cruisers approached each other the light forces became engaged, and the battle had begun.

In this approach (Diagram 9) Beatty maneuvered at a speed of nineteen and one-half knots. When assured of bringing the German ships to action, he changed from southeasterly courses and steered to the northeast toward the enemy. One hour later, at 3:25, Hipper's battle cruisers were sighted to the east, distant fifteen miles. By this time Beatty had concentrated his six battle cruisers, but, although the British had been maneuvering at a speed of only 19.5 knots, the four fast battleships under Evan-Thomas were still five miles away to the northwest. Admiral Beatty evidently estimated his battle cruisers as a sufficiently powerful force to destroy Hipper's ships unassisted. The British Admiral now increased speed to twenty-five knots, took a line of bearing formation to clear the smoke, and attacked. Hipper turned to the southeast. This placed the two columns about twelve miles apart on converging courses. When a little over eight miles from each other both sides opened fire simultaneously at 3:48. (Diagram 11.)

Admiral Evan-Thomas with his slower squadron of four battleships was now endeavoring to close up. He was so far astern, however, that he was unable to take an effective part in this first phase of the battle, and failure to concentrate before attacking proved costly to the British. The German fire was rapid and accurate. The *Lion* was hit twice three minutes after fire was opened and within ten minutes the roof of one of her turrets was blown off and two guns put out of action. By this time the *Tiger* and *Princess Royal* had also been hit and in a few minutes the *Indefatigable* was overwhelmed by a salvo. She fell out of line, sinking by the stern, was hit by another salvo forward, turned over and sank at 4:04. The range was now opening. Beatty had altered course to the south to confuse the enemy's fire control, and also to give Evan-Thomas opportunity to get into action by cutting a corner. (Diagram 12.) At 4:08 the *Derfflinger* ceased firing. Her target ship was out of range. (The *Derfflinger's* limit of gun elevation was for 20,000 yds.) There was now a brief lull in the engagement between the battle cruiser lines.

At this time Evan-Thomas's battleships were able to open at the extreme range of 19,000 yards to 20,000 yards on the *Von der Tann,* Hipper's rear ship. At 4:16 the second ship from the rear was also taken under fire by the battleships, but, partly due to smoke, and partly to unfavorable light conditions to the eastward, difficulty was experienced

**Diagram No. 11**

AT 3:48 THE OPPOSING BATTLE CRUISERS OPEN FIRE

in seeing the targets, not more than two ships being visible at a time. That the fire of Evan-Thomas's battleships was of slight effect is shown by the fact that the target ships of these battleships suffered little damage during this run to the south.

Beatty and Hipper soon closed again, and, as the range decreased, the battle cruiser big gun action was renewed. Hipper's third ship was seen to be on fire. The gunnery officer of the *Derfflinger* reported that the *Lion* had temporarily left the line, and that this had caused him to shift his fire from the *Princess Royal* to the *Queen Mary*. The latter was thus under the concentrated fire of the *Derfflinger* and the *Seydlitz*. At 4:26, after having been hit repeatedly, the *Queen Mary* sank in a terrific explosion, evidently caused by the blowing up of a magazine. The *Tiger*, following close astern, passed through a dense cloud of smoke and a great deal of débris fell on her decks, but except for this the *Queen Mary* had completely disappeared. This happened 38 minutes after the engagement started and 20 minutes after the loss of the *Indefatigable*. Eighteen of the *Queen Mary's* complement of 1,300 men were subsequently picked up by a destroyer.

At 4:15 about twelve British destroyers moved out to attack Hipper's line. At the same time about eleven German destroyers also advanced to attack the British line. These light forces met in close range action between the lines. A German light cruiser and several supporting destroyers

joined in this engagement. The Germans fired twelve torpedoes at British capital ships at distances ranging from 10,000 to 8,000 yards. Evan-Thomas turned his battleships away to avoid them —two torpedoes were seen to cross his track. The British destroyers also fired torpedoes, for the most part at a range of about 7,000 yards, and Hipper turned his ships away to escape them. (Diagram 13.) Most of these torpedoes were fired between 4:30 and 4:45.

It was reported that the swell handicapped the speed of the German destroyers. This may account for the fact that only about eleven of the thirty-three destroyers with Hipper took part in the attack. On the British side about twelve out of thirty-one took part. Also, the destroyers on both sides apparently did not get far enough ahead to push home an effective close range torpedo attack. Although no torpedoes hit, they exerted an important influence on the battle tactics at a critical part of the gun-fire action by causing ships of both sides to turn away and open the range just as Scheer's battleship fleet was effecting juncture with Hipper's battle cruisers.

At 4:30 Scheer sighted the fighting battle cruiser lines to the north by west. At 4:38 one of the British advance light cruisers, the *Southampton,* reported the High Sea Battle Fleet to Beatty. Jellicoe and Hood, now advancing at their best speed to reënforce Beatty, also received this report.

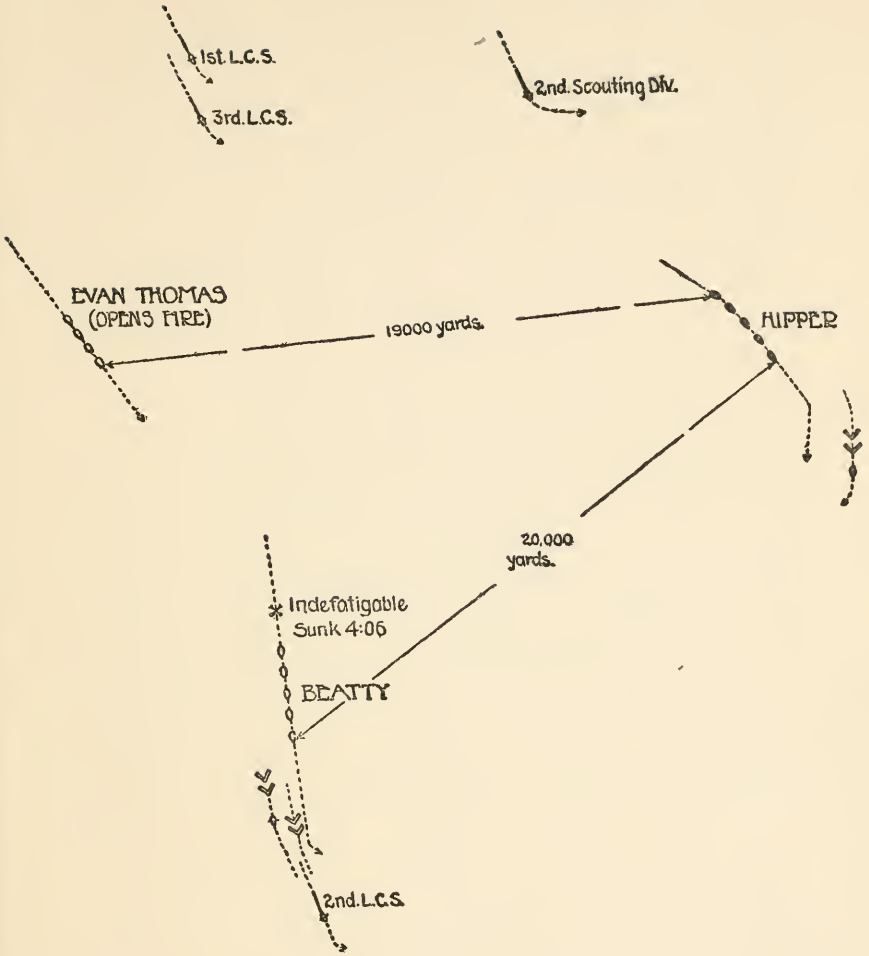



DIAGRAM NO. 12

AT 4:08 ADMIRAL BEATTY INCREASES THE RANGE AND ADMIRAL EVAN-THOMAS CLOSES ENOUGH TO OPEN FIRE AT LONG RANGE

Beatty stood on until he sighted Scheer's van at 4:42, when he turned the battle cruisers sixteen points in succession to starboard. At this time Hipper was about 20,000 yards away and Beatty was not under an effective fire. A few minutes later Hipper turned his ships around and took station ahead of Scheer's van. The German battle fleet was now on course N.N.W., in line of divisions north, engaging the British battle cruisers at a range of 19,800 yards. Hipper was ahead of Scheer to the north, also firing at Beatty's and Evan-Thomas's ships at a range of 15,400 to 16,400 yards. At 4:49 five German destroyers tried, without success, to attack with torpedoes. A little after 5:00, two British destroyers also fired torpedoes at Hipper's ships, but without effect. At 4:53 Evan-Thomas's ships, after engaging Hipper on an opposite course, also countermarched, and turned up astern of Beatty. This placed the heavier ships in a favorable position to fight a rear guard action against the van of Scheer's column. (Diagram 14.)

Just before and during this turn, Evan-Thomas reported that the light was in favor of the enemy, and that the British battleships could only lay on and fire at the gun flashes, visibility being twelve miles to the west and six miles to the east. The smoke made by the destroyers during their attack hung between the lines and helped decrease the visibility. This, in addition to the opened range, due

to the "turn away" maneuvers to evade torpedoes, caused the gun-fire of both sides to be ineffective. Otherwise, this juncture with Scheer might have proved a critical period for Beatty's force. Upon the arrival of the High Sea Battle Fleet, Beatty had no alternative; he had to withdraw his ships. At the time he countermarched, had the Germans been pressing him closely, considerable damage might have been done the British force, as the maneuver is an awkward one to perform under heavy gun-fire. This marks the end of the first phase of the battle.

Before turning to the second phase, it should be pointed out that Scheer had a plan to envelop Beatty's force between the German battleships and Hipper's battle cruisers. This plan was abandoned during the approach.

The first contact with light forces had been reported to Scheer at 2:30. He had continued the German Battle Fleet on a north course until he received a second radio report from Hipper that British battle cruisers had been sighted. Scheer then closed his line into battle formation, 500 meters (545 yards) between ships and 1,000 meters (1,090 yards) between squadrons, cleared his ships for action, increased speed to fifteen knots, and changed course first to the northwest, then to the west. Scheer has explained his plan and estimate as follows:

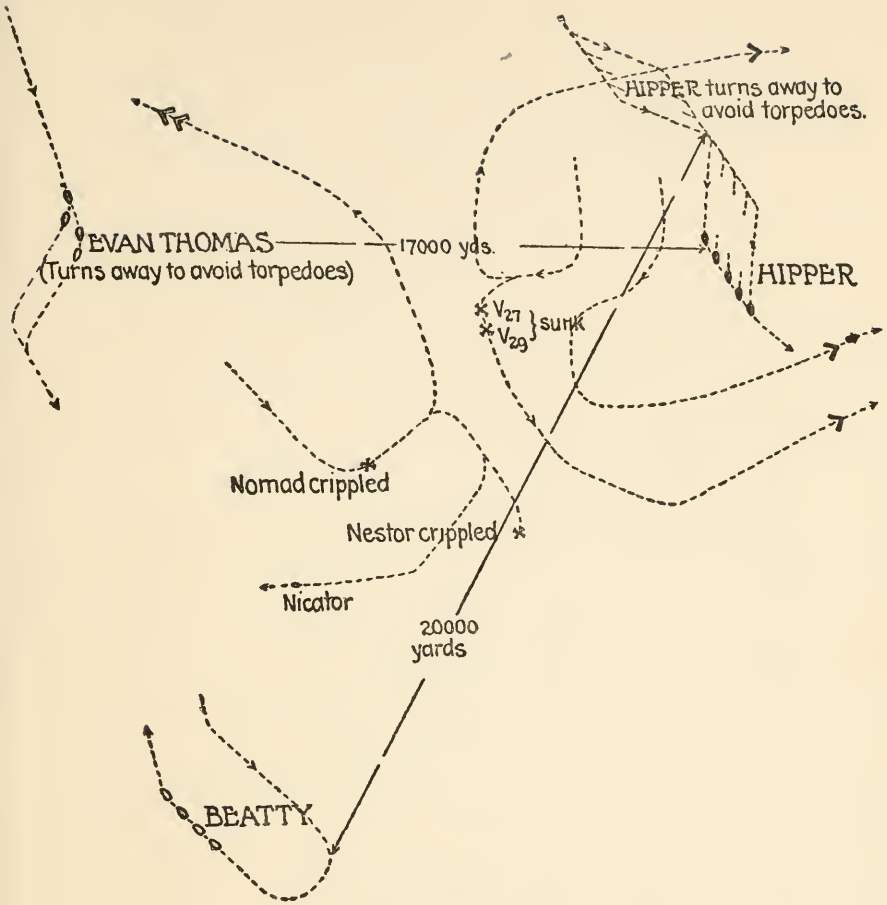



DIAGRAM NO. 13

4:30 TO 4:45 BOTH SIDES DELIVER TORPEDO ATTACKS

"The message received at 3:45 P.M. from the Chief of Reconnaissance that he was engaged with six enemy battle cruisers on a southeasterly course showed that he had succeeded in meeting the enemy, and as he fought was drawing him closer to our Main Fleet. The duty of the Main Fleet was now to hasten as quickly as possible to support the battle cruisers, which were inferior as to material, and to endeavor to hinder the premature retreat of the enemy. At 4:05, therefore, I took a northwesterly course at a speed of fifteen knots, and a quarter of an hour later altered it to a westerly course in order to place the enemy between two fires, as he, on his southerly course, would have to push through between our line and that of the battle cruisers."

The plan to envelop Beatty was abandoned when Scheer received word that the six British battle cruisers were being supported by battleships. Of his new estimate and changed decision Scheer writes:

"While the Main Fleet was still altering course, a message came from Scouting Division Two that an English unit of battleships, five ships, not four [Scheer then supposed that there were five instead of four battleships engaged], had joined in the fight. The situation thus was becoming critical for Scouting Division One (Hipper's battle cruisers),

confronted as they were by six battle cruisers and five battleships. Naturally, therefore, everything had to be done to get into touch with them and a change was made back to a northerly course. . . ."

When Scheer made this estimate and decided to change his plan of approach, he had not heard of the destruction of the *Indefatigable* and *Queen Mary*. This news did not reach him until night. He evidently drew an erroneous picture of Hipper as hard pressed by the superior British force, whereas, in fact, as has been seen, he was doing very well. Under the altered plan the juncture was effected in such a way that Beatty succeeded in extricating his ships without further loss.

In looking back at the positions of Hipper and Beatty at 2:30, it would appear a fair criticism to observe that Hipper was then in grave danger of being cut up by the greatly superior force under Beatty and Evan-Thomas. The British, however, did not concentrate this superior force against Hipper's command and, as a consequence, Evan-Thomas took no very effective part in the first phase of the action, and Hipper succeeded in getting well out of a difficult position.

Again, viewing the 4:30 situation in the light of Scheer's plan, the question may be raised as to whether or not the tables had then been turned. Had Beatty allowed himself to be drawn into a position where he might have been cut off and de-

stroyed by Scheer and Hipper? Scheer's intention, as above stated, was to lead the Battle Fleet west of Beatty, allowing him to proceed on to the south in pursuit of Hipper until the British could be pinched between two fires. It is interesting to speculate as to what might have happened had Scheer persisted in this plan. It cannot be denied that risks were taken, in the first place by Hipper, and in the second place by Beatty. But war cannot be waged without running risks.

# V

## THE BATTLE: SECOND PHASE

(4:55 to 6:40)

*British Advance Force engaged with van of German High Sea Fleet; Beatty leads action to north and effects juncture with Jellicoe and Hood. Jellicoe deploys the battle fleet and Scheer withdraws to the southwest.* (Diagram 15.)

Sighting Scheer's battleships presented to Beatty an enlarged situation. Up to now, his objective had been to cut off and destroy Hipper's detachment. The unexpected advent of Scheer, however, made the destruction of the German battle fleet the primary objective. Henceforth, Beatty's essential mission was to maintain contact with Scheer and keep Jellicoe informed of the enemy's course, speed and formation, so that the Grand Fleet might be brought into action quickly and effectively.

Admiral Jellicoe, at 2:30, upon receiving the first report that enemy light cruisers and destroyers had been sighted, had directed Hood to proceed with his three battle cruisers to head off the enemy should he try to escape through the Skaggerak. The battle fleet had ceased zig-zagging and had increased

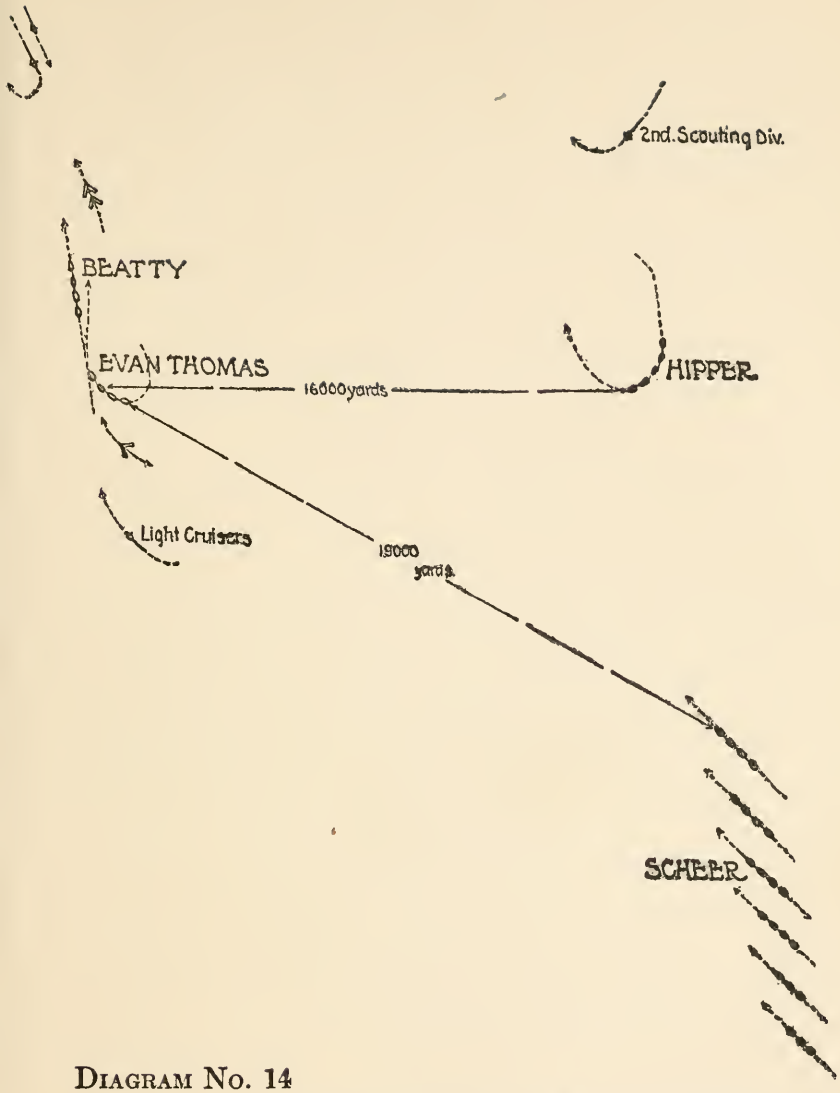



DIAGRAM NO. 14

AT 4:55 P.M. ADMIRAL BEATTY TAKES NORTHWEST COURSE, AND ADMIRAL SCHEER JOINS IN BATTLE

speed. A little over an hour later Jellicoe heard of the presence of Hipper's battle cruisers. At 4:00 P.M. Hood's orders had been changed and he had been directed to reënforce Beatty. By 4:00 P.M. the Battle Fleet was also closing the advance force at a speed of twenty knots. When Jellicoe received report that Beatty was in contact with the enemy battle fleet and retiring, the Grand Fleet was about 60 miles away to the N.N.W., and hastening to the support of the battle cruisers at a speed of twenty knots. As Beatty was making twenty-five knots, the two forces, while on opposite courses, were coming together at the rate of forty-five sea miles an hour. (Diagram 15.)

As Beatty hauled out of range at 5:15, Hipper shifted his fire to Evan-Thomas. This brought the four British battleships under the fire of five battle cruisers at about 16,000 yards, and also the van of the German battle fleet at about 18,500 yards. At 5:20 Scheer ordered all fighting forces "to give chase." The ships of the *Koenig* class were able to make twenty-three knots for a short period and Evan-Thomas reported that at his best speed he had difficulty in drawing ahead.

The two leading British battleships fired at Hipper's ships and the two rear battleships fired at Scheer's van. The British do not record any particular damage received at this time. During this phase the weather became less clear, and the wind shifted from N.W. to S.W. Powder fumes and

smoke hung over the sea and cut off the view to the north and east. Only now and then could Scheer see Hipper's ships. The light, however, was in favor of the Germans, being clearer to the west than to the east. At 5:30 Beatty gradually changed course to the right, and at 5:42, after having been out of action for half an hour, again opened fire on Hipper at about 14,000 yards, and during the next ten minutes the *Lion* alone fired some fifteen salvoes. Hipper also turned to the eastward on an interior concentric curve.

Turning now to Hood, we find that, due to the previously-mentioned 12-mile discrepancy in navigation, he had missed juncture with Beatty and, on a course S. by E., had passed to the eastward of the fighting area. At 5:30 Hood's western protective scout cruiser heard firing to the southwest and, in heading over to investigate, became engaged with Hipper's outpost light cruiser and destroyers. Hood then turned around to N.W. and at 5:55 opened an effective fire with his port battery against the German light cruisers. During this cruiser fighting, four British destroyers attacked, and about the same time ten or twelve German destroyers advanced and fired torpedoes from within 60 h.m. (6,500 yards) of Hood's line. Hipper had turned his battle cruisers to starboard, away from the torpedo threat, and being further influenced by the poor visibility which made it difficult to return Beatty's fire, Hipper continued to

 HOOD

maneuver to close the distance which had opened between him and Scheer. Hood's battle cruisers saw the German torpedoes and evaded them by individual ship maneuvers, two ships turning away and one toward the menace. No torpedoes hit. The German light cruiser *Wiesbaden* was disabled. The British destroyer *Shark* was disabled and later sunk. The *Chester* was damaged. The German light cruiser *Pillau* was also damaged. This contact with Hood gave the German command the impression that Jellicoe was approaching from the N.E.

Almost simultaneously with Hipper's veer round to starboard, Admiral Scheer had observed that his leading battleships were turning to an easterly course in conformity to Beatty's change of direction. The High Sea Fleet, during the chase to the north had opened out, and the faster divisions in the van had drawn ahead. Scheer now decided to reform his line. The order "Leader in Front" was signaled at 5:45 P. M. (Diagram 16) and speed temporarily reduced to 15 knots to give the divisions a chance to get into position. Before Jellicoe arrived, therefore, Hipper had turned to close the High Sea Fleet, and had taken station just ahead of the battleships. Consequently Scheer had his fleet closed up and well in hand. This slowing down and maneuvering added to the difficulty Jellicoe and Beatty experienced in fixing the exact position of the High Sea Fleet.

The ensuing period was a crowded one. In addition to the contacts between the light forces of Hood and Hipper, the outpost cruisers of Jellicoe had also become engaged. This juncture of forces on approximately opposite courses at high speeds caused events to follow in rapid succession. Both Jellicoe and Scheer had to do quick thinking and, in the midst of uncertainties, make important tactical decisions under a weight of responsibility as great as has ever been borne by any naval commander. In order to get a balanced conception of the tactics used, we shall try, first, to look at them from the British Commander-in-Chief's point of view in the *Iron Duke,* and then transfer to the German flagship to get the other aspect of the situation as it appeared to Admiral Scheer.

The British Commander-in-Chief, as he approached the scene of action, was perplexed by meager and conflicting information. The plots on the chart from the reports of the *Lion* and *Southampton* had led Jellicoe to expect contact ahead. There was, however, a discrepancy of at least 12 miles in the navigation. This had already caused Hood to miss Beatty and pass by him to the eastward. Moreover, another message from the *Southampton,* as received on board the *Iron Duke,* said that the German battle fleet was to the northeast of the battle cruisers. This was an unlikely formation. It was apparent that Hood would have sighted Scheer's battleships had it been the case, so

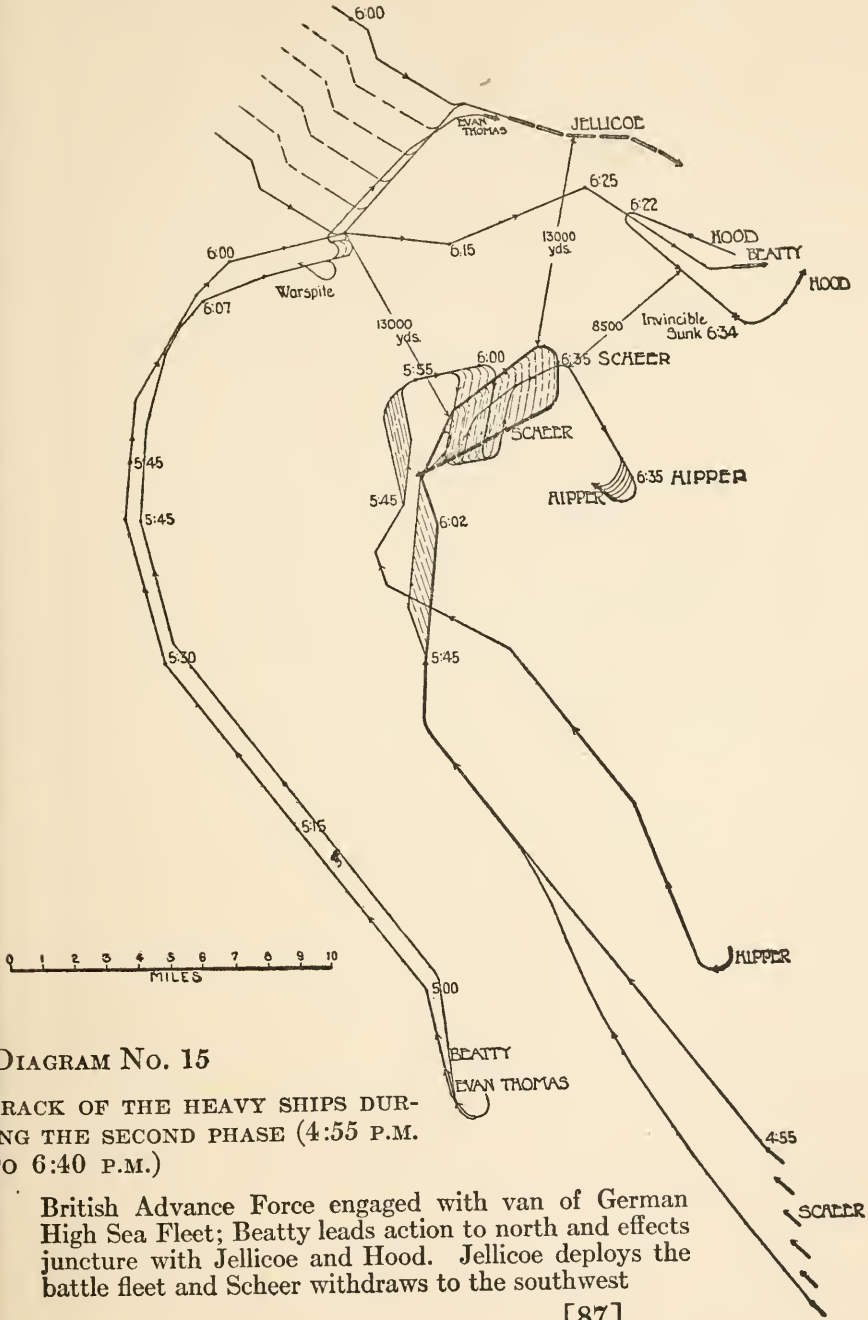



DIAGRAM NO. 15

TRACK OF THE HEAVY SHIPS DURING THE SECOND PHASE (4:55 P.M. TO 6:40 P.M.)

British Advance Force engaged with van of German High Sea Fleet; Beatty leads action to north and effects juncture with Jellicoe and Hood. Jellicoe deploys the battle fleet and Scheer withdraws to the southwest

the report was discredited on the face of it as improbable. Additional information was received by Jellicoe as follows:

At 5:40 the *Black Prince,* the starboard wing armored cruiser, reported that battle cruisers were in sight bearing south, distant five miles. At 5:45 the *Comus,* stationed three miles ahead of the Battle Fleet, reported heavy gun-fire on a south bearing. Shortly after this, flashes of gun-fire were visible bearing S.S.W. At 5:50 Admiral Arbuthnot, commanding the armored cruisers in the *Defense,* reported ships in action bearing S.S.W. and steering N.E. At 5:55 the *Marlborough* reported gun flashes and heavy gun-fire on the starboard bow; at 5:56 strange vessels bearing S.S.W.; and at 6:00 British battle cruisers bearing S.S.W., three to four miles distant. Shortly after 6:00 the *Iron Duke* sighted these vessels under Admiral Beatty about five miles away on an easterly course. (Diagram 17.)

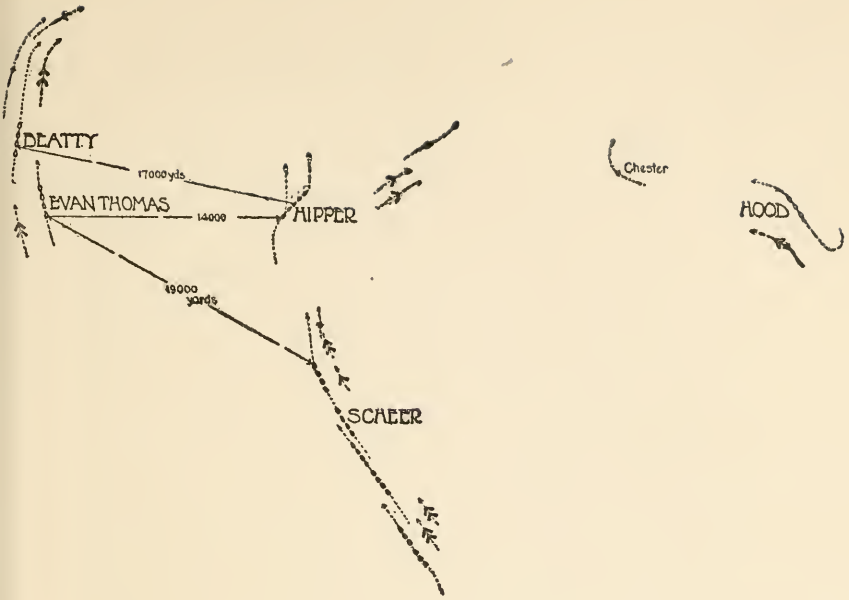
The British tactics and the estimates that led to them are described by Admiral Jellicoe in the below-quoted passages:

"At this stage, shortly after 6:00 P.M., there was still great uncertainty as to the position of the enemy's Battle Fleet; flashes of gunfire were visible from ahead round to the starboard beam, and the noise was heavy and continuous. Our cruisers ahead seemed to be hotly engaged, but

the fact that they were not closing the Battle Fleet indicated to me that their opponents could hardly be battleships.

"In order to take ground to starboard, with a view to clearing up the situation without altering the formation of the Battle Fleet, a signal had been made to the Battle Fleet at 6:02 P.M. to alter course leaders together, the remainder in succession, to south (a turn of three points). Speed at the same time was reduced to 18 knots to allow of the ships closing up into station.

"The conflicting reports added greatly to the perplexity of the situation, and I determined to hold on until matters became clearer. The conviction was, however, forming in my mind that I should strike the enemy's Battle Fleet on a bearing a little on the starboard bow, and in order to be prepared for deployment I turned the Fleet to a southeast course, leaders together and the remainder in succession, and the destroyer flotillas were directed by signal at 6:08 P.M. to take up the destroyer position No. 1 for battle. (Diagram 18.) There was, however, a very short interval between this signal to the destroyers and the signal for deployment, and consequently the destroyers did not reach their positions before deployment. The subsequent alterations of course to the southward and westward added to their difficulties and delayed them greatly in gaining their stations at the van of the Fleet after deployment. . . .




## Diagram No. 16

AT 5:45 P.M. ADMIRAL HOOD'S LIGHT FORCES ENGAGE ADMIRAL HIPPER'S ADVANCE SCOUTS.—IN THE MEANWHILE SCHEER SLOWS DOWN AND REFORMS HIS FLEET

"At 6:01 p.m., immediately on sighting the *Lion,* a signal had been made to Sir David Beatty inquiring the position of the enemy's Battle Fleet. This signal was repeated at 6:10, and at 6:14 P.M. he signalled: 'Have sighted the enemy's Battle Fleet bearing south-southwest.' This report gave me the first information on which I could take effective action for deployment. . . . The enemy battle fleet position given placed it thirty degrees before the starboard beam of the *Iron Duke,* or fifty-nine degrees before the starboard beam of the *Marlborough,* and apparently in close proximity. There was no time to lose, as there was evident danger of the starboard wing column of the Battle Fleet being engaged by the whole German Battle Fleet before deployment could be effected. So at 6:16 P.M. a signal was made to the Battle Fleet to form line of battle on the port wing column, on a course southeast by east, it being assumed that the course of the enemy was approximately the same as that of our battle cruisers. Speed was at the same time reduced to 14 knots to admit of our battle cruisers passing ahead of the Battle Fleet, as there was danger of the fire of the Battle Fleet being blanketed by them." (Diagram 17.)

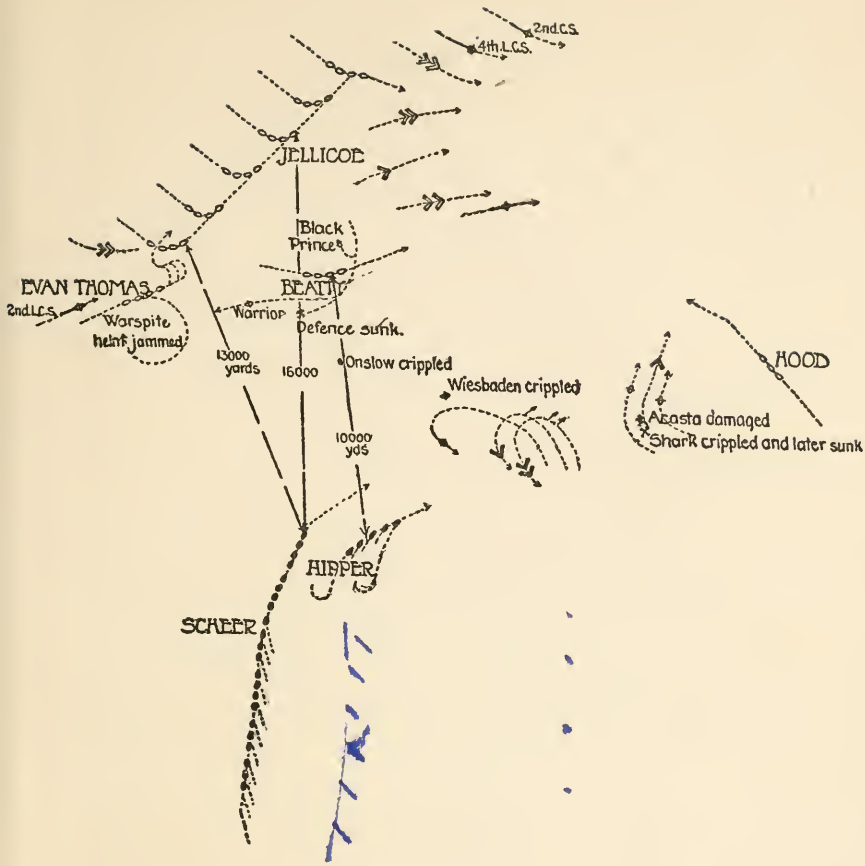
Before considering the German point of view, in order more clearly to understand Admiral Scheer's decisions, it might be well to explain that the High Sea Fleet had been drilled to perform a

certain withdrawing maneuver generally regarded in British naval circles as dangerously difficult if not quite impracticable to execute under gun-fire. This maneuver, by which Scheer hoped to retire the inferior High Sea Fleet whenever the superior British gun-fire became too hot, was a simultaneous "swing-around" of all ships under cover of a smoke screen made by cruisers and destroyers. Admiral Scheer had carefully exercised his fleet in this maneuver so that the ships could perform it, whether they were all on the same course in a straight battle line, or steering various courses disposed on a curved battle line.* In short the Germans had a definite offensive-defensive plan of battle and the High Sea Fleet had been assiduously rehearsed in a novel method of attack and withdrawal.

At this stage of the battle, shortly before 6:00, Admiral Scheer explains his estimate and decisions as follows:

"While this encounter with the advance guard of the English Main Fleet was taking place, we, on our flagship, were occupied debating how much longer to continue the pursuit in view of the advanced time. There was no longer any question of a cruiser campaign against merchantmen in the Skaggerak, as the meeting with the English fight-

* Scheer himself says: "At our peace maneuvers great importance was always attached to their being carried out on a curved line and every means employed to insure the working of the signals."




## Diagram No. 17

AT 6:16 P.M. ADMIRAL JELLICOE DEPLOYS THE BRITISH BATTLE FLEET TO PORT AND SLOWS DOWN, WHILE ADMIRAL BEATTY CLOSES GERMAN VAN AT UTMOST SPEED

ing forces which was to result from such action had already taken place. But we were bound to take into consideration that the English Fleet, if at sea, which was obvious from the ships we had encountered, would offer battle the next day. Some steps would also have to be taken to shake off the English light forces before darkness fell in order to avoid any loss to our Main Fleet from nocturnal torpedo-boat attacks. . . .

"At 6:02 came a wireless: '*Wiesbaden* incapable of action.' On receipt of the message I turned with the fleet two points to port so as to draw nearer to the group and render assistance to the *Wiesbaden.*"

Even at this late hour Admiral Scheer did not know of the close proximity of Jellicoe. The German Commander-in-Chief apparently felt that he could delay making his night dispositions long enough to help the *Wiesbaden.* Had he known that the fleet battle which he expected to take place the following day would be precipitated by his maneuver to the north, there is no evidence that he would have attempted to postpone the engagement. But in such circumstances the plight of the *Wiesbaden* would have hardly constituted a large enough consideration to influence the tactics of the major fleet, unless it so happened that going to her assistance fitted in with the plan of battle.

This maneuver toward the *Wiesbaden* brought

the British ships under Beatty and Evan-Thomas into Scheer's view as well as the confused cruiser fighting to the north and northeast. Another message from destroyers ahead reported twenty British battleships following a southeast course. Admiral Scheer thus describes the 6:16 circumstances:

"It was now quite obvious that we were confronted by a large portion of the English Fleet, and in a few minutes their presence was notified on the horizon directly ahead of us by rounds of firing from guns of heavy caliber. The entire arc stretching from north to east was a sea of fire. The flashes from the muzzles of the guns were distinctly seen through the mist and smoke on the horizon, though the ships themselves were not distinguishable.

"There was never any question of our line veering round to avoid an encounter. The resolve to do battle with the enemy stood firm from the first. The leaders of our battleship squadrons, the Fifth Division, turned at once for a running fight, carried on at about 13,000 m. (14,200 yds.). The other divisions followed this movement on orders signalled from the flagship."

Just before the opposing battleship squadrons became engaged, Arbuthnot's armored cruisers stationed ahead of Jellicoe, while pressing after enemy light forces, had become involved with the

capital ships. Three of these had crossed ahead of Beatty and had turned up on an opposite course between the lines coming under the fire of Scheer's fleet. The flagship *Defense* was sunk; the *Black Prince* was badly damaged and during the following night was destroyed by German battleships; the *Warrior* was disabled and later abandoned in a sinking condition.

Beatty, upon sighting Jellicoe to the north, crossed ahead of him on easterly courses at utmost speed. Hood, now approaching on a northwest course, sighted Beatty at 6:10, and eleven minutes later, in obedience to orders signalled by Beatty, counter-marched, taking station ahead of the *Lion* and engaging Hipper on an east-southeast course. At 6:25 Hood had closed Hipper to 8,000 yards, and at 6:33 his flagship, the *Invincible,* was sunk by gun-fire. At about the same time Hipper's flagship, the *Lützow,* was heavily hit and put out of action.

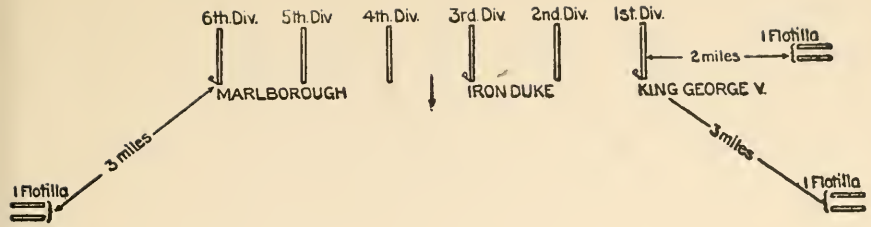
In the meanwhile, the British battleships had become engaged during deployment. At 6:19 Evan-Thomas, who was following at some distance behind Beatty, realized that the battleship fleet was deploying on the port wing and, in order not to blanket fire by crossing ahead, decided to make a wide turn to the left and form astern of Jellicoe's battleships. The *Warspite's* helm had jammed just before this and she made a complete circle to starboard toward the enemy line. Although put

out of action by the concentrated German fire, she succeeded subsequently in reaching port. At 6:17, before turning to port to deploy, the *Marlborough* division opened fire on German ships of the *Kaiser* class at a range of 13,000 yards. By 6:30 the engagement had become general and the Grand Fleet deployment was completed at 6:38. (Diagram 19.)

Scheer was now in the disadvantageous position of being capped by a greatly superior force. This was a contingency, however, for which he had prepared the previously-mentioned "swing-around" withdrawing maneuver. The tactics used are described in the following excerpts from Admiral Scheer's account of the battle:

"I observed several enemy hits and consequent explosions on the ships at our leading point. Following the movement of the enemy they had made a bend which hindered free action of our Torpedo Boat Flotilla II stationed there.

"I could see nothing of our cruisers, which were still farther forward. Owing to the turning aside that was inevitable in drawing nearer, they found themselves between the fire of both lines. For this reason I decided to turn our line and bring it on to an opposite course. Otherwise an awkward situation would have arisen round the pivot which the enemy line by degrees was passing, as long distance shots from the enemy would certainly have




## Diagram No. 18

BRITISH BATTLESHIPS IN APPROACH FORMATION WITH DESTROYERS IN POSITION NO. 1 FOR DEPLOYMENT ON LEFT FLANK DIVISION

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hit our rear ships. As regards the effectiveness of the artillery, the enemy was more favorably situated, as our ships stood out against the clear western horizon, whereas his own ships were hidden by the smoke and mist of the battle. A running artillery fight on a southerly course would therefore not have been advantageous to us. The swing around was carried out in excellent style. At our peace maneuvers great importance was always attached to their being carried out on a curved line and every means employed to ensure the working of the signals. The trouble spent was now well repaid; the cruisers were liberated from their cramped position and enabled to steam away south and appeared as soon as the two lines were separated, in view of the flagship. The torpedo boats, too, on the lee side of the fire had room to move to the attack and advanced.

"While the veering round of the line was proceeding, two boats of Torpedo Boat Flotilla III (G-88 and V-73) and the leading boat of Torpedo Boat Flotilla I (S-32) had attacked. [It was probably one of these torpedoes that hit the *Marlborough.*] The remaining boats of the Torpedo Boat Flotilla had ceased the attack on an order to retire from the leader. The weakening of the enemy fire had induced the First Leader to give the order, being persuaded that the enemy had turned away and that the flotilla, which would be urgently needed in the further development of

the battle, would find itself without support. Owing to the shortening of the line at the head, the boats of the other flotillas were not able to attack. One division (Torpedo Boat Flotillas IX and VI) had just returned from the 6 o'clock attack. The enemy line did not follow our veer round. In the position it was to our leading point, it should have remained on, and could have held us still further surrounded if by a simultaneous turn to a westerly course it had kept firmly to our line.

"It may be that the leader did not grasp the situation, and was afraid to come any nearer for fear of torpedo attacks. Neither did any of the other officers on the enemy side think of holding firmly to our line, which would have greatly impeded our movements and rendered a fresh attack on the enemy line extremely difficult. Immediately after the line was turned the enemy fire ceased temporarily."

Although the British ships observed that their targets turned away, it does not appear that either Admiral Jellicoe or Admiral Beatty fully grasped this maneuver of the High Sea Fleet. In the diagrams published in the official reports and also in Admiral Jellicoe's book, there is no indication of this simultaneous wheeling away of all ships in the German battle line. Doubtless the smoke made by the destroyers and cruisers prevented the

British from observing exactly what had happened. The light wind, now from the southwest, favored the Germans in their turn away movement as it left the British involved while Scheer quickly cleared it on his west course and was able to reform his fleet in good visibility and clear of the enemy fire.

As has already been remarked, the British in general had not regarded such a maneuver as a practicable one to perform under gun-fire. In explaining the Grand Fleet movements Jellicoe has stated:

"The objection to altering by turning all the ships together was the inevitable confusion that would have ensued as the result of such a maneuver carried out with a very large fleet under action conditions in misty weather."

Admiral Scheer's prepared tactics, therefore, came as a surprise and were not only a complete success, but were undetected. The secret was kept and this meant that the same surprise maneuver might be repeated with equal chance of success.

There was now a lull in the battle. Beatty hauled away to the east, reduced speed, and ordered the remaining two ships of Hood's squadron to take station astern. Jellicoe turned a few points to the right in an effort to regain touch, but it is obvious that much more radical maneuvering would have been required to hold the German

fleet under gun-fire. This ended the second phase of the battle.

Although Admiral Jellicoe has stated that it had been foreseen that the Germans would employ withdrawing tactics under cover of smoke, it would appear that this particular simultaneous "swing-around" maneuver had not been anticipated, and that the British plan of battle did not afford an effective counter-stroke.

This second phase of the battle raises many tactical questions. Coördination of forces—battleships, cruisers, and destroyers—in the preliminaries and during a fleet engagement presents intricate problems. Under the circumstances, it is not surprising that the somewhat dispersed British units under Jellicoe, Beatty, Hood, and Evan-Thomas, experienced difficulties. It is important, however, to examine these difficulties, and endeavor to read aright the lessons which they teach.

In the first place, there was confusion and failure in the service of information. Information is the ground work upon which plans are constructed. Accuracy is vital, but the most accurate information is of no value if not received in time. Accurate, timely information bestows the power of initiative and surprise, which, if properly used, may be decisive factors. Victory may hinge upon the reliability and opportuneness of the information received.

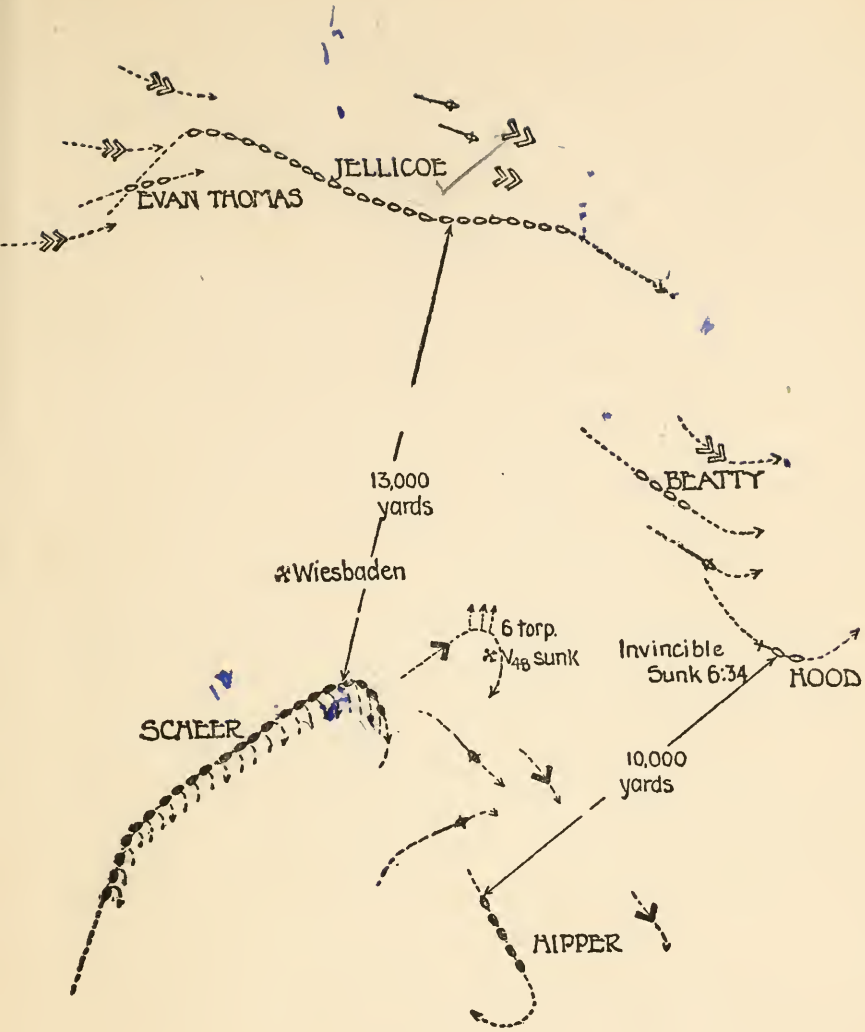



DIAGRAM NO. 19

AT 6:35 P.M. ADMIRAL JELLICOE COMPLETES HIS DEPLOYMENT AND ADMIRAL SCHEER EXECUTES A "SWING-AROUND" WITHDRAWING MANEUVER

## THE BATTLE: SECOND PHASE

Up to this point in the action events have followed in logical sequence; the advance forces made contact; the more powerful British detachment under Beatty compelled the weaker German squadron under Hipper to retire; Beatty was thus led to a contact with the High Sea Battle Fleet under Scheer; in turn, being pressed by the superior force under Scheer, Beatty retired toward Jellicoe; then, upon the arrival of Jellicoe, the inferior German fleet employed retiring tactics.

During the preliminaries the scout forces made and kept contact with Scheer, but accurate and timely information was not transmitted to Jellicoe. There were no linking up ships or other means employed to guard against discrepancies in navigation, and it appears a fair criticism that system and method to assure the accomplishment of the scout mission were lacking.

In addition to this failure of the advance reconnaissance force to accomplish fully its scout mission, there was confusion in the conduct of the attached light forces in the immediate van of the British battle fleet.

The light forces attached to a battle fleet have a two-fold function: First, to screen their own capital ships, denying information to the enemy, while at the same time they drive in the enemy's screen to get information of his main body; and second, to take such stations for action as will give opportunities for an offensive with torpedoes

against the enemy capital ships, while at the same time they are on guard to break up any contemplated enemy destroyer and light cruiser attacks.

At this juncture of the battle, the British light forces, instead of helping the major ships in maneuvering into action, actually hindered them. In pressing after the enemy, Arbuthnot's armored cruisers suddenly broke across Beatty's line of advance; the *Defense, Warrior* and *Black Prince* came up on an opposite course between the lines blanketing the fire of the battle cruisers, and there the *Defense* was sunk and the *Warrior* and *Black Prince* disabled, to no apparent useful purpose other than temporarily drawing the enemy's fire. German destroyers broke through the British light forces and reported to Scheer the presence of the British battle fleet.

Turning now to the offensive function of the light forces, we find that little was accomplished. When Hood first appeared he was compelled to evade by maneuvering the torpedoes fired by eleven German destroyers. Also Hipper turned back to close Scheer because of the menace of a British torpedo attack. Otherwise there was only desultory torpedo firing. There is no report of torpedoes being sighted by the capital ships of either side between 6:15 and 6:35, although conditions were favorable for destroyer work. The delay in ordering the British battle fleet destroyers to their action

positions accounts for some of the lack of destroyer activity on the British side, and Scheer has stated that the radical changes of course to the right embarrassed the German destroyers in the van. Only three German destroyers succeeded in attacking at about 6:30. One hit was scored on the *Marlborough*.

The British had a superiority of 36 cruisers against 11. The British destroyers were numerically about equal to the German, but the former were better gunned, larger and more seaworthy, although the German destroyers carried more torpedoes. Under the circumstances, it is a conspicuous fact that the British flotillas did not push home an attack on the German battleships either just before, or during, or immediately after, the "swing-around" maneuver.

Of the British plan and doctrine for the destroyers, Admiral Jellicoe writes:

"The Grand Fleet Battle Orders contained a great deal in the way of discussion and instructions on the subject of torpedo attack in a Fleet action. The duties of light cruisers and destroyers in this connection were dealt with at considerable length, and stress was laid on the supreme importance of both making early torpedo attacks on the enemy's line and of immediately countering such attacks, and it was pointed out that an early attack by our own destroyers would not only tend to stop an

enemy attack, but would place our attacking vessels in the best position to meet a hostile attack.

"The battle stations of both light cruisers and destroyers were so fixed that they should be in the best positions to effect these two objects, such positions being obviously in the van of the Fleet; in order to provide against a 16-point turn on the part of the enemy, or deployment in the opposite direction to that anticipated, one or two flotillas, according to the numbers available, and a light cruiser squadron, were also stationed in the rear."

Under this plan and doctrine it is difficult to understand why there was not greater offensive activity on the part of the British destroyers. It would appear that they were, for the most part, kept busy in trying to attain their assigned geometric battle stations.

The method used in deploying the British Battle Fleet has been severely criticized. In defending it Admiral Jellicoe has presented the following argument:

"My first and natural impulse was to form on the starboard wing column in order to bring the Fleet into action at the earliest possible moment, but it became increasingly apparent, both from the sound of gun-fire and the reports from the *Lion* and *Barham,* that the High Sea Fleet was in such close proximity and on such a bearing as to

create obvious disadvantages in such a movement. I assumed that the German destroyers would be ahead of their Battle Fleet, and it was clear that owing to the mist, the operations of destroyers attacking from a commanding position in the van would be much facilitated; it would be suicidal to place the Battle Fleet in a position where it might be open to attack by destroyers during such deployment.

"The further points that occurred to me were, that if the German ships were as close as seemed probable, there was considerable danger of the 1st Battle Squadron, and especially the *Marlborough's* Division, being severely handled by the concentrated fire of the High Sea Fleet before the remaining divisions could get into line to assist. Included in the 1st Battle Squadron were several of our older ships, with only indifferent protection as compared with the German capital ships, and an interval of at least four minutes would elapse between each division coming into line astern on the 6th Division and a further interval before the guns could be directed on to the ship selected and their fire become effective.

"The final disadvantage would be that it appeared from the supposed position of the High Sea Fleet, that the van of the enemy would have a very considerable 'overlap' if line were formed on the starboard wing division, whereas this would not be the case with deployment on the port wing column.

The overlap would necessitate a large turn of the starboard wing division to port to prevent the 'T' being crossed, and each successive division coming into line would have to make this turn, in addition to the 8 point turn required to form the line. I therefore decided to deploy on the first, the port wing division.

"The further knowledge which I gained of the actual state of affairs after the action confirmed my view that the course adopted was the best in the circumstances.

"The reports from the ships of the starboard wing division show that the range of the van of the enemy's battle fleet at the moment of deployment was about 13,000 yards. The fleets were converging rapidly, with the High Sea Fleet holding a position of advantage such as would enable it to engage effectively, first the unsupported starboard division, and subsequently succeeding divisions as they formed up astern. It is to be observed that it would take some 20 minutes to complete the formation of the line of battle.

"The German gunnery was always good at the start, and their ships invariably found the range of a target with great rapidity, and it would have been very bad tactics to give them such an initial advantage, not only in regard to gunnery, but also in respect of torpedo attack, both from ships and from destroyers."

On the other hand, it has been said that this deployment sacrificed the advantage of surprise, delayed support to Beatty's hard pressed ships, and also surrendered to a certain extent the initiative. There is, perhaps, more than a modicum of truth in this. Certainly, turning away from the enemy and slowing down cannot be characterized as highly aggressive tactics. But Admiral Jellicoe's plan of battle was not an aggressive offensive. His plan was manifestly a cautious offensive and his deployment was made accordingly. From the beginning to the end of the battle the maneuvers of Admiral Jellicoe were consistently of a nature which can be described in a general way as tactics of a "cautious offensive." It should be understood that this was his plan of battle, and it is significant that it was officially approved by the Admiralty both before and after the battle.

Notwithstanding this, and without presuming to pass judgment on the British plan of battle, it may be pointed out that there was lack of coördination in carrying it out at this critical juncture. Jellicoe slowed the battle fleet down and turned away; Hood and Beatty closed the enemy van at utmost speed; Evan-Thomas was in a quandary—the battle orders said in case of deployment away from Heligoland the fast battleship squadron will take station in the van—but this would have entailed crossing the entire front of the Fleet, so Evan-Thomas decided to make a wide sweep and

turn up astern. As a consequence of all this, we find Beatty and Hood bearing the brunt of a close range fire without much support. Evan-Thomas's ships were hauled away from the engagement in maneuvering for position astern, and it is reported that battleships in the rear were temporarily slowed down and even stopped during the deployment. Shortly after 6:30, just as the deployment was completed, Scheer executed a simultaneous ship movement to the southwest, and, as the British battle plan did not provide any maneuver to hold the enemy in action, these evasion tactics of an inferior fleet with less speed were a complete success.

## VI

## THE BATTLE: THIRD PHASE

### (6:40 P.M. to 7:17 P.M.)

*Scheer turns back and attacks the British center with guns and torpedoes. After a brief engagement Scheer again withdraws to the west under cover of a smoke screen.* (Diagram 20.)

Up to this time the battle had gone decidedly in favor of the Germans. Of the heavy ships, three British battle cruisers had been sunk, while on the German side, Hipper's flagship, the *Lützow,* had been put out of action. The other battle cruisers had suffered some damage but still remained effective fighting units. The *Derfflinger,* for example, although all of her turrets were ready to continue the action, had masts and rigging badly cut up, and her torpedo net had been shot away aft, in such a way that the ship had to be stopped in order to clear it from the port screw. It is significant that the *Derfflinger* was able to take advantage of the lull in the battle after Scheer's withdrawing maneuver to accomplish this precarious operation unmolested. (This experience led

to the subsequent discard of these torpedo nets.)

Hipper now decided to abandon the *Lützow* and transfer his flag in a destroyer to another battle cruiser. He went first alongside the *Seydlitz* but was informed that her radio had been shot away. Before he could reach another ship the battle cruisers were engaged again, and it was not until 9:00 P.M. that Hipper finally succeeded in getting on board the *Moltke.* In the meanwhile the *Derfflinger,* under Captain Hartog, was directed to take the lead.

The British forces were apparently baffled by the German tactics. At 6:50 Beatty slowed to 18 knots and reformed his line with the two remaining ships of Hood's squadron astern. It seems that the *Lion* passed the wreck of the *Invincible* twice, indicating a loop. Jellicoe's course on deployment was S.E. by E., but the van had hauled in to S.E., without signal, to close the enemy. At 6:50 Admiral Jellicoe signaled to change course by divisions in succession to south. Several torpedoes were now seen crossing the track of the rear of the battle line. These were probably fired by the three destroyers which advanced to the attack just as Scheer executed his withdrawal maneuver. At 6:54 one hit the *Marlborough* but she was able to retain station in the battle line. During the night she was compelled to proceed to port at reduced speed. This was the only torpedo hit scored on a British capital ship.

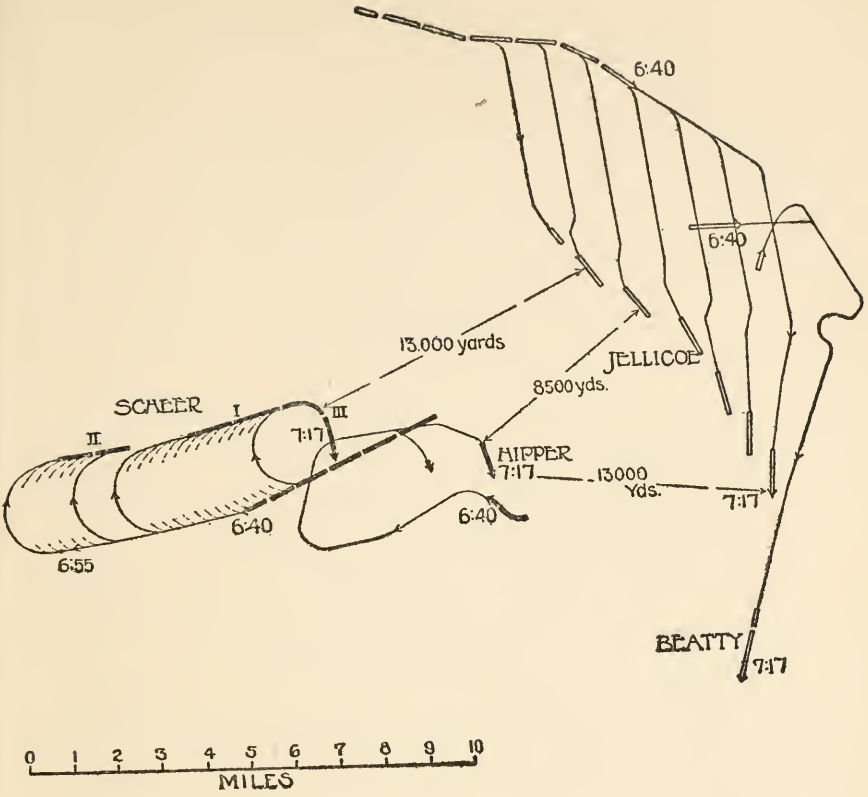



DIAGRAM NO. 20

TRACK OF THE HEAVY SHIPS DURING THE THIRD PHASE (6:40 P.M. TO 7:17 P.M.)

Scheer turns back and attacks the British center with guns and torpedoes. After a brief engagement Scheer again withdraws to the west under cover of a smoke screen

At 6:33 the speed of the battle fleet had been increased from 14 knots to 17 knots and this speed was maintained from now on throughout the day and night. The following extract from Admiral Jellicoe's book explains these speed decisions, which were part of the plan and doctrine of a cautious offensive that dominated the British battle fleet tactics throughout the engagement:

"Experience at all Fleet Exercises had shown the necessity for keeping a reserve of some three knots of speed in hand in case of a long line of ships, in order to allow of station being kept in the line under conditions of battle, when ships were making alteration of course to throw out enemy's fire, to avoid torpedoes, or when other independent action on the part of single ships, or of divisions of ships, became necessary, as well as to avoid excessive smoke from the funnels; for this reason the Fleet speed during the action was fixed at 17 knots. In the 1st Battle Squadron, some ships had at times to steam 20 knots, showing the necessity for this reserve. Up to 7:10 P.M. also the torpedo flotillas were not in station ahead."

These maneuvers of Jellicoe and Beatty would have proved ineffective to close the German Fleet had it not been for the fact that Scheer himself decided at this time to assume the offensive. This decision was remarkable in many respects.

The following statements of the German Commander-in-Chief merit close scrutiny:

"It was still too early for a nocturnal move. If the enemy followed us our action in retaining the direction taken after turning the line would partake of the nature of a retreat, and in the event of any damage to our ships in the rear the Fleet would be compelled to sacrifice them or else to decide on a line of action enforced by enemy pressure, and not adopted voluntarily, which would therefore be detrimental to us from the very outset. Still less was it feasible to strive at detaching oneself from the enemy, leaving it to him to decide when he would elect to meet us next morning. There was but one way of averting this—to force the enemy into a second battle by another determined advance, and forcibly compel his torpedo boats to attack. The success of the turning of the line while fighting encouraged me to make the attempt, and decided me to make still further use of the facility of movement. The maneuver would be bound to surprise the enemy, to upset his plans for the rest of the day, and if the blow fell heavily it would facilitate the breaking loose at night. The plight of the *Wiesbaden* helped also to strengthen my resolve to make an effort to render assistance to her and at least save the crew.

"Accordingly, after we had been on the new course about a quarter of an hour, the line was again

swung round to starboard on an easterly course at 6:55 P.M. The battle cruisers were ordered to operate with full strength on the enemy's leading point; all the torpedo boat flotillas had orders to attack.

"The battle that developed after the second change of course and led to the intended result very soon brought a full resumption of the firing at the van, which, as was inevitable, became the same running fight as the previous one, in order to bring the whole of the guns into action. This time, however, in spite of 'crossing the T,' the acknowledged purpose was to deal a blow at the center of the enemy line. The fire directed on our line by the enemy concentrated chiefly on the battle cruisers and the Fifth Division. The ships suffered all the more as they could see but little of the enemy beyond the flash of fire at each round, while they themselves apparently offered a good target for the enemy guns. The behavior of the battle cruisers is specially deserving of the highest praise, —crippled in the use of their guns by their numerous casualties, some of them badly damaged, obeying the given signal, 'At the enemy,' they dashed recklessly to attack."

Scheer's turn to an easterly course quickly closed the British. At 7:05 Jellicoe had turned three more points to starboard to close, but at 7:10 enemy destroyers were seen approaching and a report

was received that a submarine had been sighted on the port bow and he brought the fleet back to course south again, "to turn on the submarine and bring the ships in line ahead ready for any required maneuver." (This report of a submarine was evidently an error as Scheer has stated no submarines were present.)

Scheer's attack landed a little abaft the British center. At 7:12 German battle cruisers emerged from the mist and smoke at a range of 10,000 yards abeam of the *Colossus,* the seventeenth battleship in line. Four British battleships were now able to open an effective fire. The German van turned to a southerly course. At 7:14 Beatty regained touch, sighting two battle cruisers and two battleships at a range of 15,000 yards. The visibility conditions were to the advantage of the British who were firing to windward at targets which had the western sky for a background. (Diagram 20.)

It is thus seen that the situation which now developed was similar to that which existed at 6:35 when Scheer executed his first withdrawal maneuver. The High Sea Fleet was again in the tactically disadvantageous position of being T'd by a superior force. This time the light conditions were very unfavorable for the Germans, and the High Sea Fleet was suffering severe damage while inflicting punishment on the enemy so slight as to be negligible. Admiral Scheer, therefore, at 7:12,

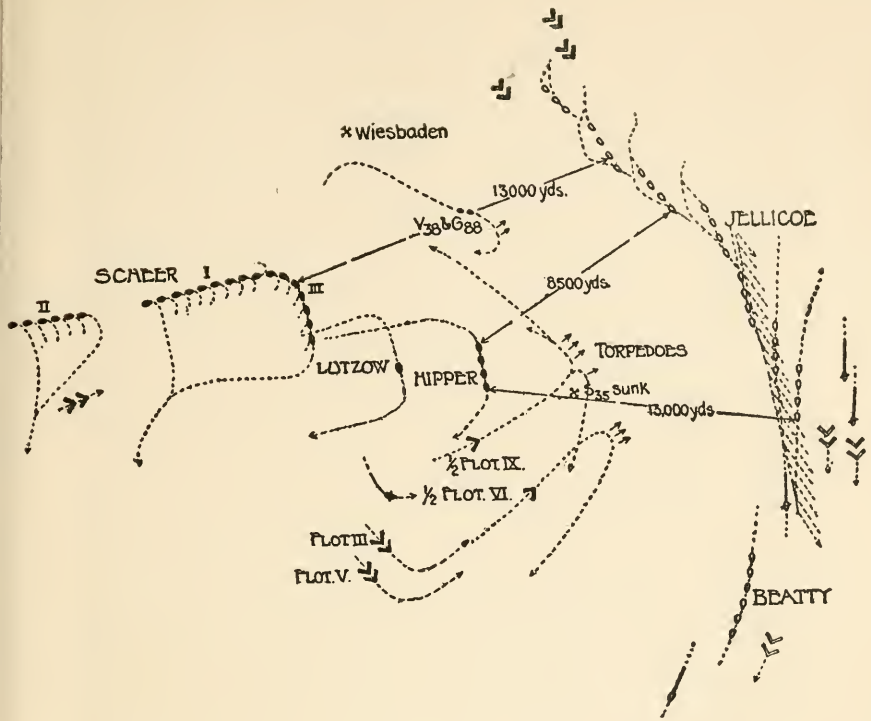



DIAGRAM NO. 21

AT 7:17 ADMIRAL SCHEER, AFTER ATTACKING THE BRITISH CENTER, AGAIN EXECUTES HIS WITHDRAWAL MANEUVER

made signal once more to perform the simultaneous "swing-around" withdrawing maneuver. This was executed at 7:17 and the High Sea Fleet again hauled out of action on a westerly course. (Diagram 21.) At the time of turning, Scheer observed that his line was somewhat congested, the *Friedrich der Grosse* was approaching the pivot while the van squadron had already turned to the south; although the signal was flying to turn to starboard, Scheer ordered his flagship, the *Friedrich der Grosse,* to turn to port. His purpose was to afford more room for maneuvering, and with this modification, the "swing-around" was executed without mishap.

At 7:12, when Scheer made signal for the battleships to withdraw from the T-ing position, the cruisers and destroyers were signalled to push home a torpedo attack. The four remaining German battle cruisers, already heavily engaged in the van, continued to close the British line and provided a protecting curtain of fire for the attacking destroyers. Under cover of destroyer attack and smoke screen, the High Sea Battle Fleet was able, for the second time, and again without the exact nature of the maneuver being detected by the British, successfully to withdraw by simultaneously swinging the line to an opposite course.

The German battle cruisers, however, were subjected to a severe fire and suffered heavily. In the *Derfflinger,* for example, at 7:13, a shell penetrated

one of the after turrets and exploded inside. The flames ignited a powder charge in the handling room but it burned without an explosion and did not reach the magazines. All but 5 of the turret crew of 78 were wiped out. It was only a few minutes later that another heavy shell penetrated the roof of the second after turret exploding inside with much the same result, except that only one of the turret crew of 80 was saved. The ship was hit again and again. A direct heavy shell hit was scored on the conning tower, but did not penetrate. Of the broadside battery of six 15-centimeter guns, all but two were put out of action. Practically all communications were carried away, and the two remaining turrets fired independently under individual control. Three thousand four hundred tons of water entered the ship and fires were burning in numerous places. The light conditions were such, at this time, that the Germans could not see the British hulls and could only fire at the gun flashes.

At 7:37 the cruisers had hauled out of action, all severely punished but, with the exception of the *Lützow,* still in formation. The *Seydlitz* in particular was badly damaged, flames were leaping upward from one of her turrets, and she was well down by the head with several thousand tons of water on board.

In the meanwhile, the German destroyers had advanced to attack in two waves. The first wave

of ten to fifteen boats was sighted by Jellicoe at 7:10 bearing S. 50° W. from the *Iron Duke.* Under a heavy fire they advanced to within 6,000 to 7,000 yards of the center of the British battleship line, fired torpedoes, and retired making a dense smoke screen. One, the S-35, was sunk. At this time the British light forces had not yet reached their assigned positions in the van favorable to counter the attack, so the battleship line was turned four points to port, away from the menace, to avoid the torpedoes. Of this maneuver Admiral Jellicoe writes:

"At a sufficient interval before it was considered that the torpedoes fired by the destroyers would cross our line, a signal was made to the Battle Fleet to turn two points to port by subdivisions. Some minutes later a report was made to me by Commander Bellairs (the officer on my Staff especially detailed for this duty, and provided with an instrument for giving the necessary information) that this turn was insufficient to clear the torpedoes, as I had held on until the last moment; a further turn of two points was then made for a short time. As a result of this attack and another that followed immediately, some twenty or more torpedoes were observed to cross the track of the Battle Fleet, in spite of our turn, the large majority of them passing the ships of the 1st and 5th Battle Squadrons at the rear of the line. It was fortunate

that, owing to the turn away of the Fleet, the torpedoes were apparently near the end of their run, and were consequently not running at high speed. They were all avoided. . . ."

At 7:25 the second wave of attacking German destroyers, about 20 boats, advanced through the smoke; but by this time the British cruisers and destroyers were in position to meet them. Also the German capital ships had withdrawn and could not afford the cover of heavy gun-fire. Upon emerging from the smoke, the German destroyers, besides being fired upon by the British battleships, were counter-attacked by British light forces and driven back before they could fire torpedoes at the battleship line. This ended the third phase of the battle.

During this phase of the action it is again a conspicuous fact that the British flotillas did not press home an attack against the German capital ships.

The tactics used by Scheer illustrate clearly the German offensive-defensive battle plan—a surprise blow with the battleships and battle cruisers, supplemented by destroyer attack, and followed by a quick withdrawal executed under cover of a smoke screen.

This does not mean, however, that Scheer foresaw, or sought, the exact situation in which he found himself just before 7:00 P.M. On the contrary, there is evidence that he considered the High

Sea Fleet then in something like a predicament.* Scheer had good cause to be satisfied with the results of the fighting up to that point, and it is quite possible he would not have sought to reëngage the British fleet had it not been for the fact that he was concerned to keep open his route of retirement toward Heligoland. For this reason, Scheer's estimate and consequent decision to return to the attack are particularly noteworthy.

The German Commander-in-Chief did not wish to give Admiral Jellicoe the initiative in pressing the High Sea Fleet to the west by attacks during twilight, thus perfecting the British encircling maneuver, getting in position to harass the German Fleet with torpedoes during the dark hours and finally reëngaging on terms of Admiral Jellicoe's choosing the next morning. Admiral Scheer, therefore, decided on a surprise attack aimed at the British center with a view to upsetting the British dispositions and plans to such an extent as would permit the High Sea Fleet to get clear and gain by daylight the Horn Reefs Passage where the advantage of position and initiative would be on the German side. Fortunately for the High Sea Fleet, its rehearsed battle maneuver was well adapted to this purpose.

At first glance, it would appear questionable tactics deliberately to charge the center of the

* The German Chief of Staff is quoted as saying that if any admiral had involved himself in such a position in peace time maneuvers he would never again have obtained a command afloat.

British line, thus placing the German Fleet in the disadvantageous position of being T'd by a superior force. The advantage of light to the British was an important consideration. As far as results in material damage were concerned, the Germans suffered heavily in this attack and the British practically not at all. It cannot be denied, however, that this aggressive maneuver, at least to a great extent, accomplished its purpose. The British fleet was pushed to the eastward: Scheer gained ground toward his base and was able to reach the shelter of his mine fields off Horn Reefs by daylight. It would appear that the results vindicated Scheer's decision. At the same time, it is to be remembered that this attack was not a pushed home offensive; it was only a limited offensive with a defensive objective.

Since the situation which developed in the third phase of the fighting was similar to that of the second phase in its general aspects, it has followed that criticisms, resting on the same general grounds, have been made of the British tactics used in both these phases. It has been pointed out that, shortly after seven, as a result of Scheer's turn to the eastward toward the British, the High Sea Fleet, was placed under the guns of the Grand Fleet, and a second opportunity thus presented to destroy the slower inferior enemy force. Critics have argued that it was only necessary to follow the lead of Beatty's battle cruisers, hold firmly to the van,

and develop an encircling maneuver from which Scheer would have been unable to escape.* To these critics Admiral Jellicoe has replied:

"(*a*) The retiring fleet places itself in a position of advantage in regard to torpedo attack on the following fleet. The retiring fleet also eliminates, to a large extent, danger of torpedo attack by the following fleet.

"(*b*) Opportunity is afforded the retiring fleet of drawing its opponent over a mine or submarine track.

"(*c*) Smoke screens can be used with effect to interfere with the observation of gun-fire by the following fleet.

"(*d*) Considerations of moral effect will force stronger fleets to follow the weaker, and play into the hands of the enemy."

Here again it can be seen that the controversy hinges on Admiral Jellicoe's plan of battle. His opponents claim that he should have used aggressive offensive tactics, while Admiral Jellicoe maintains that his plan and tactics of a cautious offensive were correct.

The "turn-away" tactics to avoid torpedoes were a particular application of this doctrine, just as the method of deployment was another particular ap-

* These critics attach much importance to Admiral Beatty's signal —"Urgent. Submit van of battleships follow battle cruisers. We can then cut off whole of enemy's battle fleet."

plication of the same doctrine—the cautious offensive. Admiral Jellicoe's arguments in justification of his tactics should be fully appreciated. In regard to the "turn-away" tactics to avoid torpedoes he writes:

"When the first attack by German destroyers took place and the first of the enemy's flotillas was seen to be approaching on a bearing 30 degrees before the beam of the *Iron Duke,* and had reached a distance of 9,000 yards or less, the 'counter' of a turn toward or away was essential. Our own flotillas had been using every endeavor to get to the van, but the frequent turns to starboard and the movement of our battle cruisers across the bows of the battle fleet had delayed their movement, and it was evident that neither they nor the light cruisers could prevent the attack from developing.

"The moment of discharge of torpedoes could not be determined with sufficient accuracy for a turn towards and therefore the Battle Fleet was turned away in subdivisions [of 2 ships each].

"It may be asked whether it was necessary to turn the whole line of battle away for this attack, or whether the leading squadron could not have held the original course. Such a movement was provided for in the Battle Orders, but the destroyers were observed at a range of 9,000 yards on a bearing 30 degrees before the beam of the *Iron Duke,* the leading ship of the center battle

squadron, and therefore the leading Battle Squadron was as open to attack by torpedoes as was the center or rear squadron; indeed the destroyers were standing in a direction to attack the van squadron. The rear of the leading Battle Squadron was also not at the time clear of the van of the center squadron, as the turns that had been made had prevented line ahead being reformed, and the *Iron Duke's* division could not turn unless the division ahead also turned. These facts strengthened the reasons which led me to make the signal general to the Battle Fleet.

"The German torpedo attacks at Jutland did not produce any great effect, and their importance should not be exaggerated. The turn of the British Battle Fleet opened the range some 1,750 yards, but it was not this turn which led to the difficulty of keeping touch with the enemy. That difficulty was due to the fact that the German Fleet made a very large turn to the westward under cover of a smoke screen at the moment of launching the earliest destroyer attacks."

This contention of Admiral Jellicoe that "the German torpedo attacks at Jutland did not produce any great effect, and their importance should not be exaggerated" should be pondered by students of tactics. While the torpedo is an important weapon and, potentially rather than actively, took a significant part in the battle of Jutland, still the

admonition not to exaggerate its importance should be heeded. The torpedo was not the controlling factor. The controlling factors were the respective battle plans. With the German "offensive-defensive" pitted against the British "cautious offensive," it would have taken some stroke of fortune to bring the forces together in decisive battle. History has taught—no matter what the weapons may be, whether sailing ships with smooth bores or dreadnaughts with high power rifles—a "cautious offensive" never gives decisive results. It takes an "aggressive offensive" to gain complete victory, such as was Nelson's at Trafalgar. Nor can it be admitted that an "aggressive offensive" battle plan is impracticable with modern fleets and modern weapons. Whether an "aggressive offensive" by the British at Jutland would have ended in victory or defeat is, and must remain, subject matter for conjecture, but it is certain that one way or the other a definite decision would have resulted.

# VII

## THE BATTLE: FOURTH PHASE

(7:40 P.M. to 9:00 P.M., dark)

*In the gathering twilight Scheer, avoiding action, turns from west to southeast and seeks to draw closer to Horn Reefs. Jellicoe tries to regain touch on westerly courses, then turns to the southwest and finally to south.* (Diagram 22.)

Shortly after 7:30 the German battle cruisers followed Scheer's battle fleet in withdrawing to the west under cover of smoke, and there was another lull in the fighting. The British battleships were not again engaged. By 7:33 Jellicoe had turned to a south by west course. At 7:41 a further change of 3 points to a southwest course was made. About this time, Beatty signaled that the enemy bore northwest by west from the *Lion,* distant 10 to 11 miles, and that *Lion's* course was southwest. Other enemy battleships were observed to the westward of the *Iron Duke,* and at 8:00 the course of the fleet was changed by divisions to west to close them. Enemy destroyers were sighted to starboard of Jellicoe's line. British light cruisers,

while advancing to attack them, were engaged by enemy battleships. The *Calliope* fired a torpedo at the leading battleship, range 6,500 yards, and an explosion was heard.

Had Jellicoe continued to the west, he would have regained touch with Scheer or forced him to move over to the west, but the mist and smoke, combined with the threat of torpedoes, influenced him, at 8:21, to turn the Grand Fleet two points to port for four minutes, then back to west for 5 minutes, and at 8:30 to form column on course southwest. In like manner as they have condemned the deployment of the second phase and the "turn away" to avoid torpedoes of the third phase, Admiral Jellicoe's critics have condemned these tactics as lacking aggressiveness—especially in view of the silhouette advantage on the British side. In fact, it would appear that the British had an excellent opportunity, even at this late hour, to engage Scheer under favorable conditions or to force him over to the west far enough to assure a battle the next morning before he could reach shelter off Horn Reefs. Whether right or wrong, it is to be noted that Admiral Jellicoe consistently held to his battle plan of a cautious offensive. (Diagram 23.)

In the meanwhile, Beatty, after being out of touch since about 7:40, made contact with enemy battle cruisers at 8:22, holding them under an

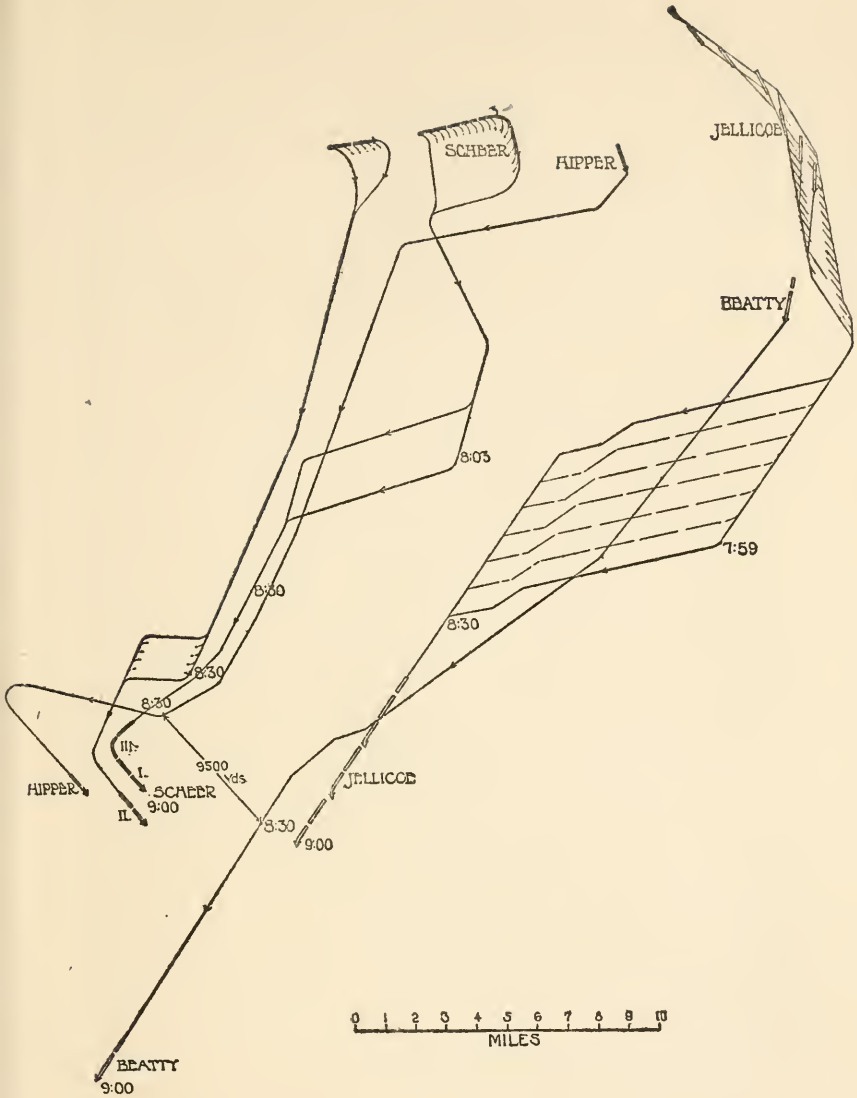



DIAGRAM NO. 22

TRACK OF THE HEAVY SHIPS DURING THE FOURTH PHASE (7:17 P.M. TO 9:00 P.M.—DARK)

In the gathering twilight Scheer, avoiding action, hauls around from west to southeast, and seeks to draw closer to Horn Reefs. Jellicoe tries to regain touch on westerly courses, then turns to the southwest and finally to south

effective fire until 8:28 when they turned away. Admiral Scheer says of this brief encounter:

". . . The ships, already heavily damaged, were hit again without being able to return the fire to any purpose. Nothing could be seen of the enemy beyond the flash of the guns at each round."

It so happened that the German Squadron of predreadnaughts in maneuvering to take their station ahead of Squadron One, crossed between Hipper and Beatty at just this time and took the fire of the latter. As they were unable to return it effectively, they also hauled away to the west. Beatty, being unsupported, did not follow them. Up to now, these slower German ships had taken little part in the action and during the previous fighting had dropped astern. Jellicoe's surmise that the enemy fleet had become temporarily divided was correct. The German ships were last seen by the light cruiser *Falmouth* at 8:38.

Turning now to the German maneuvers during this phase, it is seen that Scheer, after withdrawing to the west, soon changed to southerly courses. His aim was to prevent an encircling maneuver and to gain ground toward Horn Reefs so that he could surely reach there by daylight. Under cover of a smoke screen to leeward he kept over as far to the east as Beatty and Jellicoe would permit. At 9:00 P.M., the two fleets were barely out of sight

of each other when the dispositions for the night were made.

Admiral Jellicoe describes the British night dispositions as follows:

"At 9 P.M. the enemy was entirely out of sight, and the threat of torpedo-boat-destroyer attacks during the rapidly approaching darkness made it necessary for me to dispose of the fleet for the night, with a view to its safety from such attacks, while providing for a renewal of action at daylight. I accordingly maneuvered to remain between the enemy and his bases, placing our flotillas in a position in which they would afford protection to the fleet from destroyer attack and at the same time be favorably situated for attacking the enemy's heavy ships."

Admiral Beatty made the following estimate:

"In view of the gathering darkness and the fact that our strategical position was such as to make it appear certain that we should locate the enemy at daylight under most favorable circumstances, I did not consider it desirable or proper to close the enemy battle-fleet during the dark hours."

The British Commander-in-Chief's reasons for not seeking a night action were:—first, that he did not wish to subject the battle fleet to night torpedo

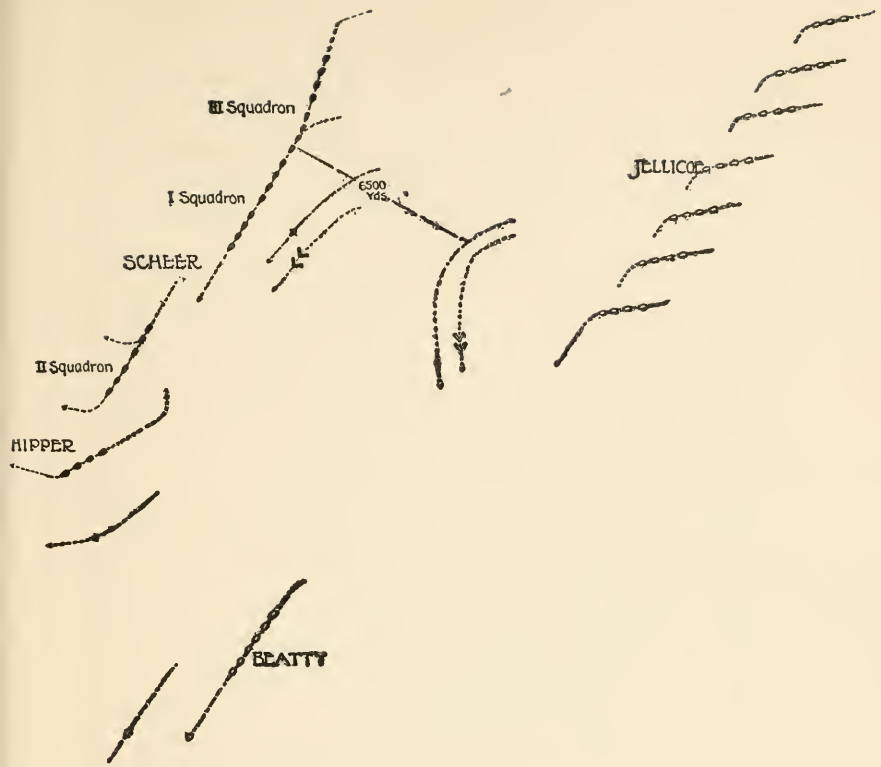



DIAGRAM NO. 23

AT 8:30 P.M. ADMIRAL BEATTY IS AGAIN ENGAGED. ADMIRAL JELLICOE TURNS TO THE SOUTHWEST

attack by the well equipped and efficient enemy destroyer flotillas; second, that the German Navy had an advantage in night fighting, as they possessed a superior searchlight system, supplemented by the star-shell, a better fire control installation, more effective explosive shell, and moreover, had demonstrated an ability to gain an initial advantage with their guns by greater accuracy and rapidity of fire; third, that British naval constructors had been restricted in giving the dreadnaughts beam by the size of their docks and that in compromising between long range gun power and armor protection they had devoted a larger percentage of tonnage to the former than had German naval constructors, that this had made the British ships more vulnerable, while the German ships had better armor protection and watertight sub-divisioning at a proportionate sacrifice of gun power, and that while this condition might favor the British in a long range day action, it worked against them in a short range night action; and, fourth, that the element of chance enters into a night encounter, concerning which Admiral Jellicoe states that there was present in his mind "the necessity for not leaving anything to chance in a fleet action, because our fleet was the one and only factor that was vital to the existence of the Empire, as indeed of the Allied cause."

The estimate that the strategic position of the British was such as to make it appear certain that

the enemy would be located at daylight under favorable circumstances, seems to have been made on an erroneous assumption as to the position of the High Sea Fleet, although it is not clear why either force should have been deceived as to the approximate location of the other. Since Admiral Jellicoe did not wish to fight a night action nor an early morning twilight action in the vicinity of Horn Reefs, the initiative as to whether or not action would be fought the next day rested with Admiral Scheer. At 9:00 P.M. this, apparently, was not appreciated by the British high command.

The German Commander-in-Chief's estimate and decisions for the night were:

"It might safely be expected that in the twilight the enemy would endeavor by attacking with strong forces, and during the night with destroyers, to force us over to the west in order to open battle with us when it was light. He was strong enough to do it. If we could succeed in warding off the enemy's encircling movement, and could be the first to reach Horn Reefs, then the liberty of decision for the next morning was assured to us. In order to make this possible all flotillas were ordered to be ready to attack at night, even though there was a danger when day broke of their not being able to take part in the new battle that was expected. The Main Fleet in close formation was to make for Horn Reefs by the shortest route, and, defying all enemy

attacks, keep on that course. In accordance with this, preparations for the night were made. In view of the fact that the leading ships of the Main Fleet would chiefly have to ward off the attacks of the enemy, and in order that at daybreak there should be powerful vessels at the head, Squadron II [predreadnaughts] was placed in the rear. Out of consideration for their damaged condition, Scouting Division I [battle cruisers] was told off to cover the rear, Division II [light cruisers] to the vanguard, and the IVth [light cruisers] to cover the starboard side. The Leaders of the torpedo-boat forces placed the flotillas in an E.N.E. to S.S.W. direction,* which was where the enemy Main Fleet could be expected. A great many of the boats had fired off all their torpedoes during the battle. Some were left behind for the protection of the badly damaged *Lützow* [speed reduced to 15 knots]; others were retained by the flotilla leaders in case of emergency.

"At 9:00 P.M. the head of the line stood at Lat. 56° 37′ N., Long. 5° 30′ E. At 9:06 the order for the night was 'Course S.S.E. ¼ E., speed 16 knots.'"

Admiral Scheer held rigidly to his plan to reach the shelter of Horn Reefs by daylight. During the late afternoon, although it cannot be said that op-

* This probably means in a sector E.N.E. to S.S.W. rather than in a line.

portunity was lacking, the British took no effective steps to frustrate it. If the British had wished to assure an action in the open sea the next morning, and at the same time wished to avoid night fighting, it would have been necessary to push the German fleet farther to the westward during the late afternoon. This was not done. Admiral Jellicoe did not wish to fight during the night nor in the Horn Reefs Passage at early daylight. It is apparent, therefore, that Admiral Scheer, at 9:00 P.M., held the initiative as to whether or not he would engage the following day.

In this last phase of the day fighting it is recorded that the light cruiser *Calliope* fired one torpedo. A summary of the torpedo attacks during the day action indicates that the destroyer work, on the whole, was disappointing. In the day action of the 31 destroyers with Beatty about 12 attacked at 4:15; four destroyers with Hood attacked shortly before six; of the 42 destroyers with Jellicoe none attacked enemy capital ships during daylight. On the German side about 11 of the 33 destroyers with Hipper attacked at 4:15; at 4:49 five more attacked; at 6:00 some 10 or 12 destroyers attacked Hood's ships; at 6:35 during the first veering around and withdrawal of the German line, three destroyers attacked (it was probably a torpedo from one of those that hit the *Marlborough*); at 7:15, during the second withdrawal of the German fleet, 10 to 15 destroyers attacked under cover of

gun-fire, fired torpedoes and made a smoke screen; and these were followed about fifteen minutes later by a second wave of about 20 destroyers which, however, were not afforded the cover of gun-fire—they were engaged and turned back by British heavy and light forces before they could attack the battleships. In addition light cruisers and destroyers on both sides did some detached fighting during which torpedoes were fired.

Making a rough estimate, it is thus seen that during the day battle, out of about 77 destroyers on the British side, about 16 to 20 fired torpedoes at capital ships, while out of about 78 German destroyers about 35 to 40 fired torpedoes at British capital ships. Considering the fact that conditions were favorable for torpedo work, it does not appear that, on the British side at least, a very effective use was made of the destroyers as an offensive weapon. It may be added, as a point to emphasize, that the German plan for coördinating battleships, cruisers, and destroyers in a daylight action, as carried out during the third and fourth phases, presents one of the most important tactical considerations of the battle.

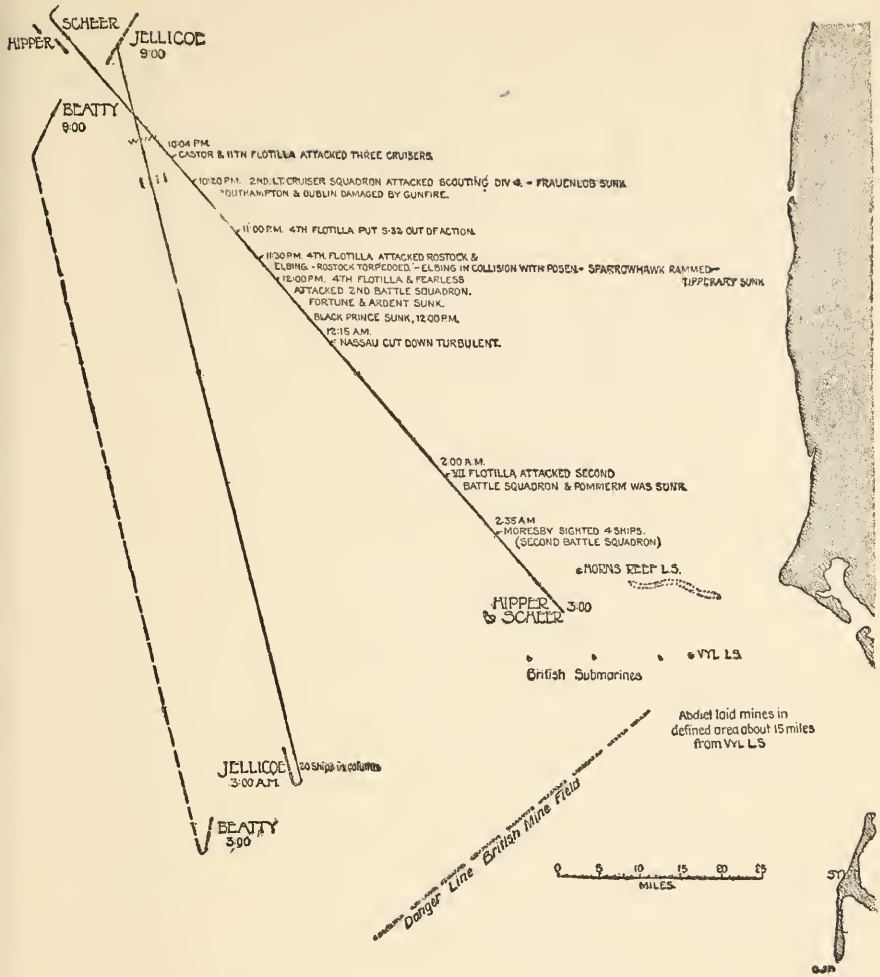
# VIII

## THE BATTLE: FIFTH PHASE

### (9:00 P.M., 31 May to 3:00 A.M., 1 June)

*During the night Jellicoe withdraws to the south while Scheer steers for Horn Reefs. British Light Forces are intermittently engaged with the High Sea Fleet.* (Diagram 24.)

At 9:00 P.M. the British Battle Fleet was disposed in night cruising formation, course south, speed 17 knots, in four parallel squadron columns, one mile apart with light cruisers ahead and astern. From east to west the order of Squadrons was 5th, 1st, 4th, and 2nd. Beatty's battle cruisers maintained a position about 14 miles on the starboard hand of the battleships. The flotillas were spread five miles astern to screen the fleet and also to be in favorable position to attack the enemy. (Diagram 25.) A mine layer was sent to lay a mine field in the Horn Reefs Passage, and during the night three British submarines were stationed in that vicinity, 4, 12, and 20 miles, respectively, west of Vyl lightship.




## Diagram No. 24

TRACK OF THE HEAVY SHIPS DURING THE FIFTH PHASE (9:00 P.M., MAY 31ST TO 3:00 A. M. JUNE 1ST)

During the night Jellicoe withdraws to the south while Scheer steers for Horn Reefs. British light forces are intermittently engaged with the High Sea Fleet

## THE BATTLE: FIFTH PHASE

Scheer's battle squadrons proceeded during the night in modified inverted order, speed 16 knots; the *Westfalen* led Squadron I in the van, then came Squadron III, then Squadron II (the pre-dreadnaughts), while the battle cruisers brought up the rear. The Germans carried out the decision —"The Main Fleet in close formation was to make for Horn Reefs by the shortest route, and, defying all enemy attacks, keep on that course."

Throughout the short summer night of about five hours the British destroyers and cruisers, which were gradually drawn to the eastward, maintained intermittent contact with the enemy battle fleet. At different times by various destroyers all of the enemy battle squadrons were sighted before daylight.

At 10:04 the western destroyers of the 11th Flotilla sighted and attacked enemy cruisers. At 10:20 the 2nd light cruiser squadron engaged Scout Division IV. The German *Frauenlob* was torpedoed and sunk, while the British *Southampton* and *Dublin* suffered from gun-fire. At 11:00 the 4th Flotilla was engaged and the German S-32 was put out of action by a hit in her boiler compartment.

At 11:30 the 4th Flotilla attacked the enemy cruisers *Rostock* and *Elbing* on the port side of the German Battle Squadron I. In withdrawing the cruisers passed through the battleship line. While doing this the *Rostock* was hit by a torpedo

and the *Elbing* collided with the *Posen.* Both the *Elbing* and *Rostock* were put out of action and later blown up. On the British side, in this attack, the *Tipperary* was disabled by gun-fire and later sank; the *Sparrowhawk* rammed the *Broke* and the former was abandoned a few hours later; the *Spitfire* also collided with an enemy cruiser.

At 11:35 the *Birmingham* reported enemy battle cruisers steering south in Lat. 56° 46′ N., 5° 46′ E. At 12:00 the 4th Flotilla and *Fearless* attacked the German 2nd Battle Squadron. The *Fortune* and *Ardent* were sunk by gun-fire. Also, at midnight the *Black Prince* suddenly appeared within 1,500 meters of Squadron I. The *Thüringen* and *Ostfriesland* switched on searchlights and opened fire. In a few seconds the *Black Prince* was on fire and four minutes later sank with a terrific explosion.

At 12:15 the German battleship *Nassau* turned out of column to evade a torpedo attack and cut through the British destroyer *Turbulent* which instantly sank. The *Nassau* also damaged the destroyer *Petard* by gun-fire. These destroyers were of the 13th Flotilla which had become scattered. The *Nassau* did not rejoin that night but met the High Sea Fleet at the Horn Reefs rendezvous next morning.

The damaged *Lützow,* accompanied by destroyers, was falling astern and shortly before 2:00 A.M. she had 7,000 tons of water forward which

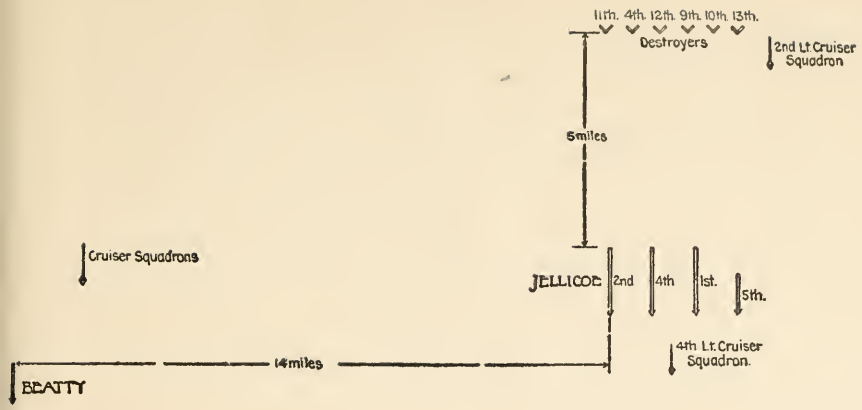



DIAGRAM NO. 25

BRITISH NIGHT CRUISING FORMATION SIGNALLED SHORTLY AFTER 9:00 P.M. 31 MAY

caused her propellers to fan the air. Thereupon she was abandoned and torpedoed. The crew, totaling 1,250, including wounded, were taken off by four destroyers.

At 2:00 the 12th Flotilla, having been drawn some miles to the northeast, made contact with the German Battle Squadron II and attacked. The *Pommern* was torpedoed and sank with all hands. The signal reporting the location of the Squadron was not received by Jellicoe or any ship, presumably because of the strong interference caused by the German wireless.*

At 2:30 the *Marlborough* reported she could make only 12 knots. Vice Admiral Sir Cecil Burney transferred his flag to the *Revenge,* and the *Marlborough,* under escort of *Fearless,* proceeded to port. This caused the 6th British battleship Division to stray, and it was not until the next evening that this Division with the Vice Admiral rejoined the fleet.

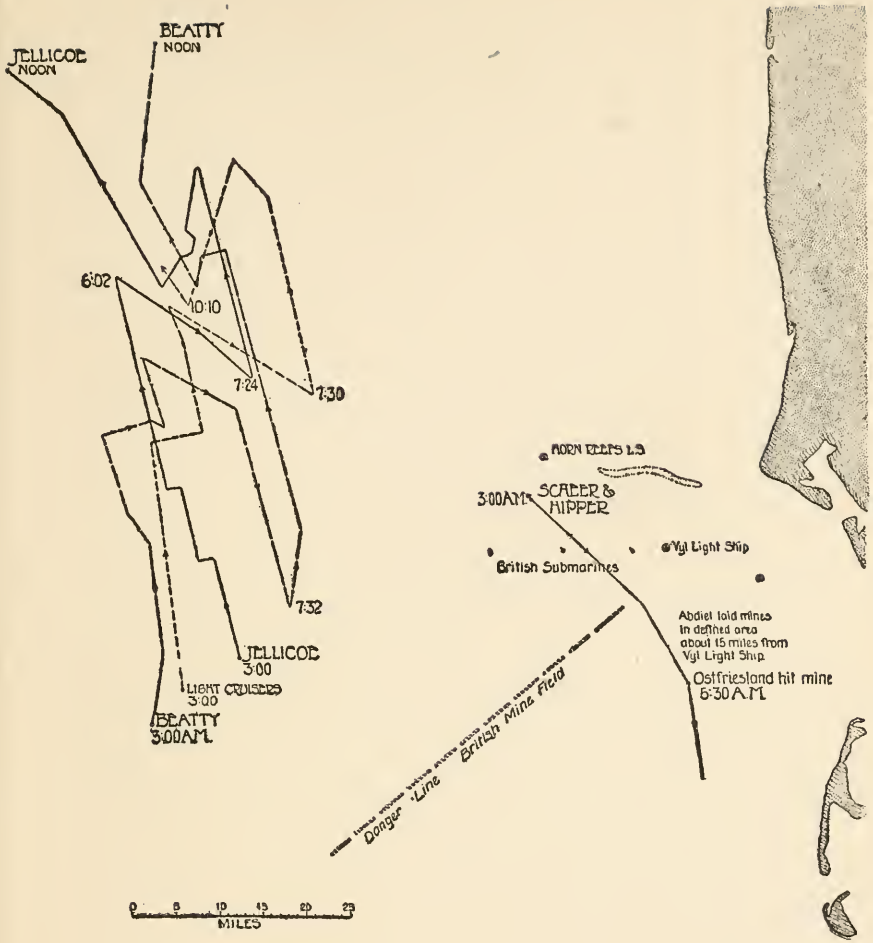
At 2:35 the destroyer *Moresby* sighted four German battleships of the *Deutschland* class and fired one torpedo. This was the last shot in the night fighting. At 2:40 dawn was breaking.

Although the British destroyers which made

* The loss of this message sent by the destroyer *Faulknor* has been featured in the press as a stroke of good fortune for the Germans which presented the British Fleet from intercepting the High Sea Fleet at daylight. This is misleading. As Admiral Jellicoe did not wish to risk either a night action, or an early morning action in the vicinity of the mine fields off Horn Reefs, it is evident that the battle would not have been renewed at daylight even if the *Faulknor's* message had been received by the British Commander-in-Chief.

contact with the enemy pushed home spirited attacks, it would appear that the general purpose of the night British dispositions was to use the destroyers for defense rather than offense. The British destroyers were assigned to take station five miles astern of the battle fleet as a defensive screen. There might have been no attacks had not the course of the German High Sea Fleet cut through the screen. This caused the night fighting which has been recounted. It was generally of a haphazard nature and did no damage to enemy capital ships with the exception of the attack of the 12th Flotilla on the 2nd Battle Squadron just before dawn. This latter attack was well planned and efficiently executed. It resulted in the destruction of the predreadnaught *Pommern.*

Admiral Scheer states that destroyers of five flotillas proceeded to the attack during the night, that they had various nocturnal fights with enemy light forces, but that they did not sight the British Main Fleet. He also states that a great many of the destroyers had expended their torpedoes during the day action. The cover of night presents opportunity for destroyer attack, and the night immediately following a day action is generally regarded as a favorable time to launch an effective destroyer offensive. It would appear, however, that the German destroyers did not search out the British Fleet, but kept comparatively close to their own ships. All the attacking flotillas except one




## Diagram No. 26

MANEUVERS ON JUNE 1ST AFTER THE BATTLE

joined the Main Fleet at daybreak. The missing flotilla had been pressed by the British light forces to the north and made its escape the next day via Skagen.

At dawn Jellicoe was far to the southwest of the Horn Reefs course. Instead of closing the Horn Reefs as had been his intention the night before, he decided to sweep to the north and gather together his scattered forces. In order to be ready for battle should the German Fleet attack, at 2:47 the Battle Fleet formed single line on course north. Visibility was now a little over 3 miles, weather fine, wind of force 3 from S.S.W., sea smooth. At 2:52 Jellicoe had 20 battleships in line accompanied by one destroyer and three cruisers.

Admiral Jellicoe has explained his early morning estimate and decision:

". . . Partly on account of the low visibility, and partly because of the inevitable difference in dead reckoning between ships, due to their many movements in course of the action and in the night, considerable difficulty was experienced in collecting the Fleet. This applied particularly to the destroyer flotillas, as they had been heavily engaged, and their facilities for computing their positions under these conditions were only slight; but the same difficulty was experienced with all classes of ships, and, although awkward, the fact did not cause me any surprise.

"The difficulties experienced in collecting the Fleet (particularly the destroyers), due to the above causes, rendered it undesirable for the Battle Fleet to close the Horn Reefs at daylight, as had been my intention when deciding to steer to the southward during the night. It was obviously necessary to concentrate the Battle Fleet and the destroyers before renewing action. By the time this concentration was effected it had become apparent that the High Sea Fleet, steering for the Horn Reefs, had passed behind the shelter of the German mine fields in the early morning on the way to their ports. The information obtained from our wireless directional stations during the early morning showed that ships of the High Sea Fleet must have passed the Horn Reefs on a southerly course shortly after daylight."

During the night five German airships were sent out to make an early reconnaissance. At 3:10 twelve battleships were reported to the westward of Horn Reefs on a north course, and a little later more battleships and battle cruisers to the north of those first reported. Also numerous light forces were reported. At 3:00 A.M. another airship reported a unit of 12 ships in Jammers Bay steaming rapidly to the south.

Soon after daylight Admiral Scheer had with him: sixteen dreadnaught battleships—the *Koenig* division of the four newest dreadnaughts had ex-

pended most of their ammunition and three of them had sustained damage. The other twelve ships were practically undamaged; five predreadnaught battleships, practically undamaged; three light cruisers, slightly damaged; sixty destroyers (approximate), many with all torpedoes expended.

On arriving at Horn Reefs at about 3:00 A.M., Admiral Scheer decided to wait for the *Lützow,* but a little later, having been informed of her fate, he made the following estimate and decision:

"In our opinion the ships in a southwesterly direction as reported by L-11 could only just have come from the Channel to try, on hearing the news of the battle, to join up with their Main Fleet and advance against us.* There was no occasion for us to shun an encounter with this group, but owing to the slight chance of meeting on account of visibility conditions, it would have been a mistake to have followed them. Added to this the reports received from the battle cruisers showed that Scouting Division I would not be capable of sustaining a serious fight, besides which the leading ships of Squadron III could not have fought for

* It does not appear that the British force of 8 predreadnaughts and four cruisers in the Humber, put to sea at all. The Harwich force of light cruisers and destroyers (about 30) were held in port by Admiralty orders until the morning of June 1st. They were then sent to reënforce Jellicoe but were too late to be a factor and were turned back before joining. Four of these destroyers were used to escort the injured *Marlborough* to port. Admiral Jellicoe has stated that this Harwich force would have been a welcome reënforcement during the night and at dawn.

any length of time, owing to the reduction in their supply of munitions by the long spell of firing. The *Frankfurt, Pillau* and *Regensburg* were the only fast light cruisers now available and in such misty weather there was no depending on aërial reconnaissance. There was, therefore, no certain prospect of defeating the enemy reported in the south. An encounter and the consequences thereof had to be left to chance. I therefore abandoned the idea of further operations and ordered the return to port."

As has been said, the arrival of the High Sea Fleet off Horn Reefs gave Scheer the initiative in regard to the renewal of the battle. His decision to return to port may be considered the final act of the engagement.

En route to the German bases the *Ostfriesland* hit a mine but suffered no great damage. A German destroyer also hit a mine and sank with all hands. Admiral Scheer reported that submarines were encountered, and their attacks frustrated. (Diagram 26.)

Considerable difficulty was experienced in reassembling the British Grand Fleet. At 3:33 the 5th Battle Squadron rejoined, but the 6th Division of three battleships did not join up until evening. The cruisers were not sighted until 6:00 A.M., and the destroyers did not join up until 9:00 A.M. The Grand Fleet, after sweeping the battlefield, proceeded to its bases.

# IX

## CONCLUSION

Such, in brief, were the tactics of the Battle of Jutland. The action was indecisive. Therefore, it had no decisive influence upon the naval situation or the general course of the war. The battle is unique in that it was the only major fleet engagement in the World War, and, considering the size, power, and scientific development of the ships and weapons used, together with the magnitude of the issue which hung in the balance, ranks with the greatest battles in history. This truth is not generally appreciated because the battle was not fought to the decisive conclusion which would have clearly demonstrated it.

Before attempting a judgment of the tactical plans and doctrines used respectively by the British and Germans at Jutland it would be necessary to take into consideration the larger questions of policy governing the conduct of the war. The ramifications of policy and strategy which may or may not have justified Admiral Jellicoe's plan and doctrine of a "cautious offensive," and Admiral Scheer's plan and doctrine of an "offensive-de-

fensive," are not within the scope of this discussion. It is enough for the present to point out these respective plans and doctrines with their consequences—in short, to explain what happened at Jutland. The importance to the United States of reading aright the lessons of this engagement is obvious.

From the German viewpoint the battle was a success, and it cannot be denied that the official announcement of a German victory in a great fleet action had an important moral effect. The British Admiralty announcement of heavy losses was accepted as confirmation of the German claim to victory. The popular demand for greater fleet activity had received a satisfactory answer, and the people of Germany were filled with pride for their Navy. This strengthened the hands of the Government at a critical period in the war.

As a matter of fact, as has been said, the battle was indecisive and had no marked effect on the naval and military situation. The British Navy still controlled the High Seas, while the German Navy continued its dominance of the Baltic and home coastal waters. Great Britain still enjoyed the benefits of open sea communications leading to all parts of the world, while German sea communications were confined to a restricted area embracing only the North European neutrals.

On the other hand, the contention made after the battle by Mr. Balfour, then First Lord of the

British Admiralty, a contention maintained by high British authority to this day, that England already enjoyed all the benefits which could have been derived from a Jutland victory, is misleading. On the contrary it would appear that the destruction of the High Sea Fleet at Jutland would have produced a change of far-reaching significance in the war situation. Mine fields not protected by guns may be swept up. With the German battle fleet eliminated the German mine fields out of range of guns ashore could have been swept up, while British mine fields could have been maintained comparatively close up to the German harbors. Submarines would have continued to give trouble, but the removal of their mobile heavy gun support would have greatly reduced their effectiveness. For the most part they would have been kept busy guarding the German coast line. It is also to be remembered that as the war advanced anti-submarine measures attained greater efficiency. Another consequence of a decisive British victory at Jutland would have been to open Allied sea communications to Russia's Baltic ports. With Russia thus saved to the Allied cause and the German Baltic coast threatened with invasion, Germany would have been subjected to severe additional pressure. Moreover, the removal of the menacing German "fleet in being" would have released great numbers of workers engaged in English naval industries and permitted the transfer of considerable energy

to army activities. And finally the unrestricted German submarine campaign against commerce would have been greatly hampered if not completely frustrated had the British fleet destroyed the German fleet at Jutland. It was the High Sea Battle Fleet that not only held the gates for the U-boats, but also, to a large extent, supplied the skilled personnel to man them. On the whole, it would not appear an exaggeration to say that a second Trafalgar on the day of Jutland would have crushed Germany's hope and brought Allied victory into view.

The tactics of two fleets in battle may be compared to the tactics employed by two chess players in moving their pieces on the game board. The ships have various values and abilities just as the chessmen have various values and abilities. But the tactics of maneuvering ships in battle present much more complex and baffling problems than the tactics of the chess game. In the latter the relative value of the pieces are invariable and the rules for moving are fixed; skill can be developed by long years of practice under conditions which never change. On the other hand, in naval tactics, numerous variables enter and interact on each other to produce a multiplicity and complicity of combinations. On the day of battle, as at Jutland, the two commanders may face each other without previous experience in actual war. Under such circumstances it would indeed be astonishing

if tactical mistakes were not made. Skill, however, is relative, and the high command better equipped by study, peace time maneuvers, war college training, and experience afloat, possesses an advantage, which, if the forces are otherwise near a parity, will inevitably decide the victory.

To naval administrators and professional men, the Jutland battle presents a study of absorbing interest. For the first and only time, modern types of ships and weapons were placed on trial. As a result, it cannot be said that there were very startling surprises. The heavy gunned line of battleships with their ability to give and receive the hardest blows again demonstrated their supreme function in the struggle for control of the Seas. The battle cruisers showed their value as scouts and also their limitations—as now developed—when called upon to take station in the line of battle. The need for light cruisers in a balanced fleet was emphasized. The varied usefulness of destroyers both for offense and defense was clearly shown at Jutland and has assured this type the recognition it deserves. Although aircraft and submarines took part in the operations they had no influence in the actual fighting of the battle. That this will not be a condition in future naval battles is a question hardly open to argument. Aircraft and submarines will undoubtedly come into their own and take their proper place as important tactical factors. But it remains a fact that they were practically negligible

at Jutland. This consideration provides a valuable check to extravagant claims made for these comparatively new elements in naval warfare.

Reviewing the tactical features of the action, it is seen that, both by commission and omission, the principles taught by the experiences of history are strikingly portrayed under the new light afforded by the use of modern ships and modern weapons. In the course of the analysis of the action it has been attempted to point by illustration these principles of offense and defense, concentration, coördination, information, surprise, initiative, plan, indoctrination, and coöperative skill. The conclusion is clear enough, that no matter how great the preponderance of material power, the navy that neglects these principles will be found wanting when tried by the test of battle.

# APPENDIX

## LOSSES AND DAMAGE

THE losses are summarized in the following table:*

### *British*

THREE BATTLE CRUISERS

| | Tonnage |
|---|---|
| *Queen Mary* | 26,350 |
| *Indefatigable* | 18,800 |
| *Invincible* | 17,250 |

THREE ARMORED CRUISERS

| | |
|---|---|
| *Defense* | 14,600 |
| *Warrior* | 13,550 |
| *Black Prince* | 13,350 |

EIGHT DESTROYERS

| | |
|---|---|
| *Tipperary* | 1,430 |
| *Nestor* | 890 |
| *Nomad* | 890 |
| *Turbulent* | 1,100 |
| *Fortune* | 965 |
| *Ardent* | 935 |
| *Shark* | 935 |
| *Sparrowhawk* | 935 |
| Total | 111,980 |

* *The High Sea Fleet at Jutland,* by Lieutenant Commander H. H. Frost, U. S. N., *Naval Institute Proceedings.*

## *Germans*

ONE BATTLE CRUISER

| | Tonnage |
|---|---|
| *Lützow* | 26,180 |

ONE PRE-DREADNAUGHT

| | |
|---|---|
| *Pommern* | 13,200 |

FOUR LIGHT CRUISERS

| | |
|---|---|
| *Wiesbaden* | 5,400 |
| *Elbing* | 4,500 |
| *Rostock* | 4,900 |
| *Frauenlob* | 2,700 |

FIVE DESTROYERS

| | |
|---|---|
| V-4 | 570 |
| V-48 | 750 |
| V-27 | 640 |
| V-29 | 640 |
| S-35 | 700 |
| Total | 60,180 |

## PERSONNEL KILLED AND WOUNDED

| | | |
|---|---|---|
| British: | Killed or missing | 6,447 |
| | Wounded | 564 |
| | Total | 7,011 |
| German: | Killed or missing | 2,400 |
| | Wounded | 400 |
| | Total | 2,800 |

(British figures quoted from Commander Bellairs; German figures from Admiral Scheer.)

# APPENDIX

The ship damage is indicated in the following table:

British Ships Damaged and Put Out of Action

Dreadnaught Battleships

*Warspite* .....Hit by major caliber shells between 20 and 25 times. Rejoined fleet during July.

*Marlborough* .....Torpedoed. Continued in day action but was forced to fall out during night.

British Ships Damaged But Not Put Out of Action

Battle Cruisers

*Lion* .....Hit many times. One turret put out of action.

*Tiger* .....Hit a considerable number of times.

*Princess Royal* .....Hit a considerable number of times. One turret put out of action.

*New Zealand* .....Hit several times.

Dreadnaught Battleships

*Barham* .....Hit by about five heavy shells.

*Malaya* .....Hit by about eight heavy shells.

*Colossus* .....Hit by one heavy shell.

Light Cruisers

*Calliope* .....Hit by one heavy shell and by several lighter shells.

*Dublin* .....Hit many times by small caliber shells.

*Southampton* .....Hit many times by small caliber shells (89 casualties).

*Chester* .....Hit many times and severely damaged (81 casualties). Rejoined fleet on July 29.

### German Vessels Considerably Damaged

(Number of Hits Approximate Only)

Battle Cruisers (4)

*Derfflinger* ..... 25 hits
*Seydlitz* ..... 25 hits; 1 torpedo hit
*Moltke* ..... 5 hits
*Von der Tann* ..... 4 hits

Battleships (4)

*Koenig* ..... 7 hits
*Grosser Kurfurst* .... 7 hits
*Markgraf* ..... 13 hits
*Ostfriesland* ..... 1 mine

Destroyers (2)

G-40 ..... Engines damaged
S-32 ..... Boilers damaged

### German Vessels Moderately Damaged

Dreadnaught Battleships (2)

*Heligoland* ..... 1 hit
*Kaiser* ..... 1 hit

Predreadnaught Battleship (1)

*Holstein* ..... 1 hit

Light Cruisers (5)

*Frankfurt* ..... 4 small caliber hits
*Pillau* ..... 1 large caliber hit
*Stettin* ..... 2 small caliber hits
*Munchen* ..... 6 small caliber hits
*Hamburg* ..... 4 small caliber hits

In addition several ships were hit by small caliber shells fired by British destroyers during the night action and a few destroyers were hit and slightly damaged.

# APPENDIX

## DESIGN OF WAR SHIPS AS AFFECTED BY JUTLAND

The following excerpts are taken from a paper by Rear Admiral D. W. Taylor, Chief Constructor, U. S. Navy (The Franklin Institute):

The losses and heavy damages sustained by the vessels of battle cruiser type bear out to some extent the pre-war contentions of those who maintained that it was not fit to take its place in the line of battle. On the other hand, excepting their greater vulnerability, it cannot be denied that they acquitted themselves with credit even when pitted against the more heavily armed and armored battleship.

Another result from this action of general influence on type is found in connection with the use of older battleships, generally referred to as of the "predreadnaught" era. The German Fleet included one squadron of vessels of this type, and this squadron not only failed to be of any essential assistance to them but proved actually to be a handicap on their freedom of maneuver. The force of this lesson was shown by the fact that subsequent to the battle most of the German battleships of this type were retired from active commission. The material weakness of this type of older ships, when opposed to the most modern weapons, was shown in the case of the *Pommern*, which blew up and sank immediately as a result of a single torpedo. During the war there were sunk by hostile action 21 predreadnaught battleships and 27 armored cruisers; of this total of 48, 11 were sunk by gun-fire and 37 by mine or torpedo, only a single explosion in nearly every case being necessary to inflict the fatal damage.

The ability of the large, modern, heavily-armored ships not only to survive, but to continue in action after the most severe punishment, was perhaps best shown by the British battleship *Warspite*, which, due to an unfortunate

accident to the steering gear, sheered out of the battle line and made two complete circles within short range of the German Fleet. This vessel was hit by major caliber shell between 20 and 25 times. The net result of this tremendous hammering was that one out of eight 15-inch guns was put out of action; there was no damage of any kind to her main machinery plant; the upper works and unprotected portions of the ship were riddled; communications were interrupted to a considerable extent; and some compartments at and below the waterline were flooded by water which came in from above, but none of the main compartments were affected to such an extent that the entering water could not be handled by the pumping arrangements provided. In short, although the ship had lost a certain amount of her margin of safety, due to decreased buoyancy and stability, and her speed had suffered on account of increased resistance due to her greater draft, she was entirely capable of resuming action after adjustments to her steering gear.

The *Marlborough* was another example of a battleship continuing in action after receiving what we were inclined formerly to consider would be a disabling attack. This vessel, although of the "dreadnaught" era, has not what is now considered a highly efficient form of protection against torpedo attack, yet, after being struck by a torpedo, resulting in the flooding of a number of compartments, which produced a list of about 7 degrees, the vessel continued in action at a speed of 17 knots.

Similarly, the German battleship *Ostfriesland* (of the "dreadnaught" era) was struck by a torpedo which produced some flooding, but the vessel was otherwise unaffected and continued on with the German Fleet.

No other British battleships received any considerable amount of punishment, but three of the modern German ships of this class received, respectively, 7, 7 and 13 hits

from major caliber guns, but none of them were disabled or even damaged to an extent sufficient to prevent their continuing in action. The *Markgraf*, which was struck 13 times, is a particularly illuminating example of the amount of punishment which a modern heavily armored ship can stand. The only damage affecting the efficiency of the ship was the cutting of the communications from the masthead fire control positions, and this only resulted in shifting the control to the lower armored station provided for this purpose. The casualties on this ship were likewise remarkably low, as there were only 8 dead and 9 wounded, or only a little more than one casualty for each major caliber hit.

One particular class of hit of special interest to American designers is that in which turrets or their barbettes have been hit. Taking the case of four British and four German vessels which suffered heavy damage, it is found that out of a total of about 116 hits, 19, or 16.5 per cent, were on turrets or barbettes, of which 16 were struck. Of this number, four were completely put out of action and one gun in each of four others was disabled, while the remaining eight escaped without serious damage. In other words, out of 66 big guns carried by these ships, the emplacements of 32 were struck, but only 12 were sufficiently damaged to prevent their further use. This comparatively low proportion of casualty in the major offensive armament, together with the demonstration of the ability of the mechanism of a turret to continue to function even after the turret has had a direct hit, appears to dispose of the argument of "too many eggs in one basket" so frequently advanced against the American three-gun turret.

Turning to the damage sustained by the battle cruisers, one's attention is naturally taken first by the tragic loss of the three great British vessels of this type. Although in one case the Germans claimed a torpedo hit on one of

them, it is generally accepted that the loss of all three was directly attributable to gun-fire, but the immediate cause of the loss in each case is still, and always will be, shrouded in mystery. It is, of course, known that each one sank in an appallingly short interval of time and that in each case at least a portion of the magazines blew up. The mystery lies in the immediate cause of the magazine explosion. Many different explanations have been advanced, but all of these affect details rather than the general characteristics of type. There seems little doubt that one of two things happened: German shell either entered the magazine through penetration of the protective deck, or, having pierced turret or barbette and exploded, flame was communicated to the magazine along the path followed by the ammunition from magazine to gun. From the fact that in the case of British ships that survived, there was only one case of penetration below the protective deck at any part (no harm resulted from this), it would seem to be highly improbable that the three battle cruisers were all sunk by protective deck penetrations directly over the magazines, and not very probable that any one of them was so sunk. We must not permit our judgment to be swayed too largely by this particularly spectacular phase of the battle. Just as in the case of the battleships previously referred to, the remaining battle cruisers on both sides demonstrated ability of modern ships of large size to withstand heavy punishment without losing their fighting efficiency. The battle cruiser type is essentially and unavoidably less thoroughly protected than the battleship type. This greater vulnerability must result in greater loss of the battle cruiser type, other things being equal; but in the Jutland fight the battle cruisers were engaged much longer and much more severely than the battleships, so that a greater percentage of loss of this type should have

resulted even had their protection been equal to that of the battleships.

A notable fact in regard to the modern ships, both battleships and battle cruisers, on both sides, is that not a single one experienced a disabling casualty to its machinery, either as a result of damage from enemy fire or as a result of engineering breakdown. In the case of one British ship and one German ship, fires were drawn from under the boilers in one fireroom, due in each case to leakage from adjacent compartments, but in each case this leakage was controlled by the pumping plant provided for the purpose. Leaving out the three lost battle cruisers, for which no data are available, the dozen large ships in the two fleets which bore the brunt of the punishment were hit a total of about 150 times by large caliber shell, or an average of more than 12 times each. Only one of these dozen ships, namely, the German battle cruiser *Lützow*, sank as the result of the damage received. Even this vessel sank only after six hours. She had received 17 large caliber hits and one torpedo. She continued to try to make the best of her way to port, but the struggle was given up about one o'clock in the morning; her crew was taken off by destroyers and she was finally sunk by a friendly torpedo.

The results of the battle, as a test of the defensive qualities of capital ships, show that in the entire action only four modern armored ships, all of them of the battle cruiser type, were lost as a result of the action. This was out of a total of 14 engaged and at least seven out of the remaining 10 survived heavier punishment than most designers in pre-war days would have considered possible.

Before the war there were two distinct schools of naval thought in regard to the main armament for the largest fighting ships. This difference of opinion existed internally in probably every navy, but internationally the

American and British navies represented the "Big Gun" advocates, as is shown by the fact that in the former we find successive increases from 12-inch to 14-inch to 16-inch, and in the latter from 12-inch to 13½-inch to 15-inch. On the other hand, the Germans adhered for a number of years to the 11-inch gun and increased their caliber to 12-inch with apparent reluctance, and a larger caliber did not appear until close to the end of the war. There were undoubtedly excellent theoretical arguments on both sides of this contention. Even now the argument cannot be definitely settled in terms of absolute material results, for too many other factors, which cannot be eliminated, enter into the problem. A convincing answer, however, appears to be provided in the very decided trend of German naval opinion since the Battle of Jutland. Practically every report from German sources and every German publication bearing on the Battle of Jutland lays stress on the superiority in range and accuracy of the British 15-inch guns. Even if no definite material advantage for the larger caliber gun could be established, there appears to remain a marked moral superiority on the side possessing the biggest guns. This, of course, only confirms the previous views and policies followed in our service.

Summing up, therefore, we find that four outstanding facts of interest to the designer appear to emerge from the smoke and flames of the battle:

First. The value of armor protection.

Second. As a corollary to this, the necessity for the maximum number of major caliber guns; for, if the modern ship can withstand great punishment, we must, for purposes of offense, provide a sufficient number of guns to inflict a degree of punishment which will be fatal.

Third. The tactical value of speed.

Fourth. The futility of subjecting older ships to the attack of modern weapons.

In other words, the value of each one of the three major elements entering into capital ship design was demonstrated and it cannot be said that any single one has emerged with an importance transcending that of the others. If, however, one must choose among them, the consensus of opinion will probably attach more importance to protection than before the battle. This arises largely from two causes:

1st. The deep impression on the human mind by such an outstanding tragedy as the almost instantaneous loss of the three great British battle cruisers.

2d. The impression that German ships, generally speaking, stood punishment better than the English. Admiral von Tirpitz has been reported to have laid down as the fundamental principle of German design: That vessels before everything else must float; that they must not sink, and if possible, not even list, and that all else is of secondary importance.

This emphasis on the feature of protection is shown already by the intensified and successful efforts of both the British and the American navies to perfect an efficient form of torpedo protection. In this connection, I think I can safely say that both services have solved this problem so far as the torpedo has been developed to date. It is also interesting to know that during the war the two services frankly and fully compared their solutions of this problem, and that although the solutions differ radically in details, they do not differ much in underlying ideas and both are believed to be successful in result. This emphasis of the protective feature is further shown by the fact that our battle cruisers, whose construction was delayed, due to the necessity for our concentrating on the construction of torpedo craft and merchant vessels during the war,

have been re-designed and given much heavier and more complete protection than was originally contemplated, accepting at the same time the slight decrease in speed necessitated thereby. We find precisely the same influence in the case of the latest British battle cruiser, the *Hood*, which was laid down shortly after the battle of Jutland and in which we find more than a 50 per cent increase in size as compared to the *Renown*, which I have previously referred to, an increase of protection almost to a battleship standard and a decrease in speed.

Passing to the general phases of the war, we come at once to the outstanding feature of the war at sea, the submarine campaign and the methods adopted to combat it. Now that the veil of secrecy has been lifted, we all know how close the German submarine campaign came to being an outstanding factor in the final result. Without entering into the legality and ethics of the German use of the submarine against merchant shipping, which all thoughtful and enlightened men join in condemning, we cannot escape the fact that we must in the future be prepared to find the submarine playing an important part in attacking and throttling enemy commerce, even on their own coasts. The use of submarines during the war has led to placing very great emphasis on the value of radius of action of these vessels, and with radius of action there must go hand in hand improvements in the living conditions on board, so that the physical endurance of the personnel may be sufficiently conserved to permit it to make full use of the material capabilities of the vessel. Both of these elements, even without the usual and concurrent demands, for higher speed and greater offensive power, inevitably lead to increased size, except for a limited class of small boats, which, due to a particular strategic situation, such as that occupied by the Germans on the Belgian Coast, makes it possible to use with good

results a large number of submarines of small size and limited speed and cruising radius. The technic of mine-laying has, during the war, so kept pace with the strategical and tactical demands for the use of this weapon, that the demonstrated practicability of laying them on the enemy's coast by means of submarines must in the future be taken into account, but this does not affect the general characteristics of the type, as the mine-laying feature can easily be substituted in whole or in part for the torpedo armament. Although the submarine was throughout the war something of a disappointment in the actual results which it obtained in inflicting loss or damage on the fighting ships of the enemy, its indirect effect on the freedom of the action of the main fighting fleets was so considerable that the problem of the development of the so-called fleet submarine is still with us and must be solved largely from theoretical and engineering considerations, rather than from direct experience in action. Another use of the submarine, not largely foreseen, which developed considerable importance during the war, is that of scouting. It has been conclusively demonstrated that these underwater craft form one of the most valuable assets to a navy in obtaining and transmitting information in regard to the movements of the enemy's forces.

War experience developed and emphasized certain facts regarding submarines as a type which are very important from the point of view of a designer, and even more important from the point of view of those who have to determine the constitution of a navy. The submarine is essentially an instrument of stealth. Once detected, it must take refuge in the depths where, for any design as yet known, its offensive powers become nil, and to the depth charge or explosive bomb developed during the war it is exceedingly vulnerable. In other words, once de-

tected and accurately located, a submarine is at the mercy of a surface vessel. While detection devices, in spite of the enormous effort expended upon them during the war, did not reach perfection, they made much progress and will undoubtedly be steadily improved as time goes on. If we had to-day an accurate device which would locate a submerged submarine with reasonable approximation several miles off, and with accuracy when one or two hundred feet directly under the surface vessel, the submarine would be already obsolete as a weapon of war. While we may never reach this ideal, and while the submarine may be given offensive features to enable it to deal in some fashion with the surface vessel from beneath the surface, the submarine is essentially a vulnerable, and, if I may so express it, a precarious type; is necessary to-day and probably will be for many years to come, but could not be relied upon as the main feature of a navy. We read at times of proposed submersible battleships and other such imaginations, but the experience of the war does not seem to indicate this as a probable future development even if mechanically possible.

On this same subject Sir Eustace d'Eyncourt, the Director of Naval Construction for the British Admiralty, very recently stated his views in the course of a paper presented before the British Institution of Naval Architects. He said:

"A good deal has been written and talked of lately about the surface capital ship being dead and the necessity for submersibles. But with our present knowledge it would be quite impossible to design a submersible ship which on the same displacement and cost had anything like the fighting qualities on the surface, which are possessed by the *Hood* (the latest British battle cruiser). Every ship is a compromise, and if in addition to the ordinary qualities of a battleship, she is required to sub-

merge, or even partially submerge, a very considerable percentage of weight has to be added to give her this additional capability of submergence. She becomes still more of a compromise, and the added weight must detract from the fighting qualities of the ship when on the surface, so that whatever is done, other things being equal, the submersible ship must be inferior to a surface ship in an ordinary action. There are many difficulties of details in the design of a submersible battleship which would take too long to go into fully now, and although there is no doubt that submarines are capable of great development, a little thought will make it clear to anybody that if naval warfare is to continue, the surface ship of the line must still hold the field as the principal fighting unit of any great navy."

The actual offensive use of aircraft against naval vessels was little developed during the war. Perhaps the most prominent case was that of the *Goeben*, which was ashore near the Dardanelles, and for six days exposed to aircraft attack, it being stated that some 217 bombs were dropped against her. There is no doubt that there will be a great development of aircraft for naval use as a result of the war experience, and some enthusiasts have visions of navies of the air rendering obsolete the navies of the ocean.

The United States Navy, which has in its own hands the development and control of its aircraft for use over the water, should take lead in any air naval development; but there is no doubt that, step by step with the air offensive, there will be developed a defensive. The defensive, moreover, will not be passive. We have seen in the late war how the light craft, destroyers, etc., on one side met and countered the attacks of similar craft on the other side. Had either side been deprived of its light craft, it would have been at most serious disadvantage. Similarly,

developments in the air will undoubtedly be along the line of defending the capital ship by auxiliary and offensive aircraft. The big ship which must be protected from projectiles of a ton weight falling at angles of 30 degrees, fired from ships almost out of sight below the horizon, is not yet in serious danger from bombs carried by present-day aircraft, with chances of hitting small indeed.

At the moment it appears that the torpedo plane is the most promising development; its weapon of attack is the torpedo which the capital ship must already be prepared to defend itself from, whether fired by a surface vessel or a submarine. A torpedo from a ship in the air is no more deadly than from a submarine under the surface. It seems probable that aircraft will sooner become dangerous to destroyers and light vessels generally than to the large ships of the line. The former are more vulnerable and will be less able to protect themselves.

Even these early developments of naval uses for aircraft made it evident that they could not efficiently perform such functions with the fleet unless they could be carried with the fleet, not only on long cruises but actually in battle, with the result that special types of ships have appeared to fill this requirement. The first essential of this type is that it should be capable not only of launching aeroplanes but also of receiving them back after the accomplishment of their mission. With the present development of aeroplanes and seaplanes, the only practicable method of providing the latter requirement is the provision of an enormously large and absolutely clear deck upon which the planes can light and be brought to rest. The next requirement is that such a vessel shall have a speed sufficient to permit it to keep up with the main battle fleet when it is going into action. This means a speed of 20 to 25 knots. These qualities, together with

the need for sufficient space to house and care for a considerable number of planes, together with their personnel, have resulted in vessels of 10,000 to 25,000 tons displacement. To obtain a clear upper deck requires special arrangements for funnels, navigating bridges, etc., which has resulted in the only absolutely new type of naval vessels of large size and cost which has appeared as a result of the war experience.

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